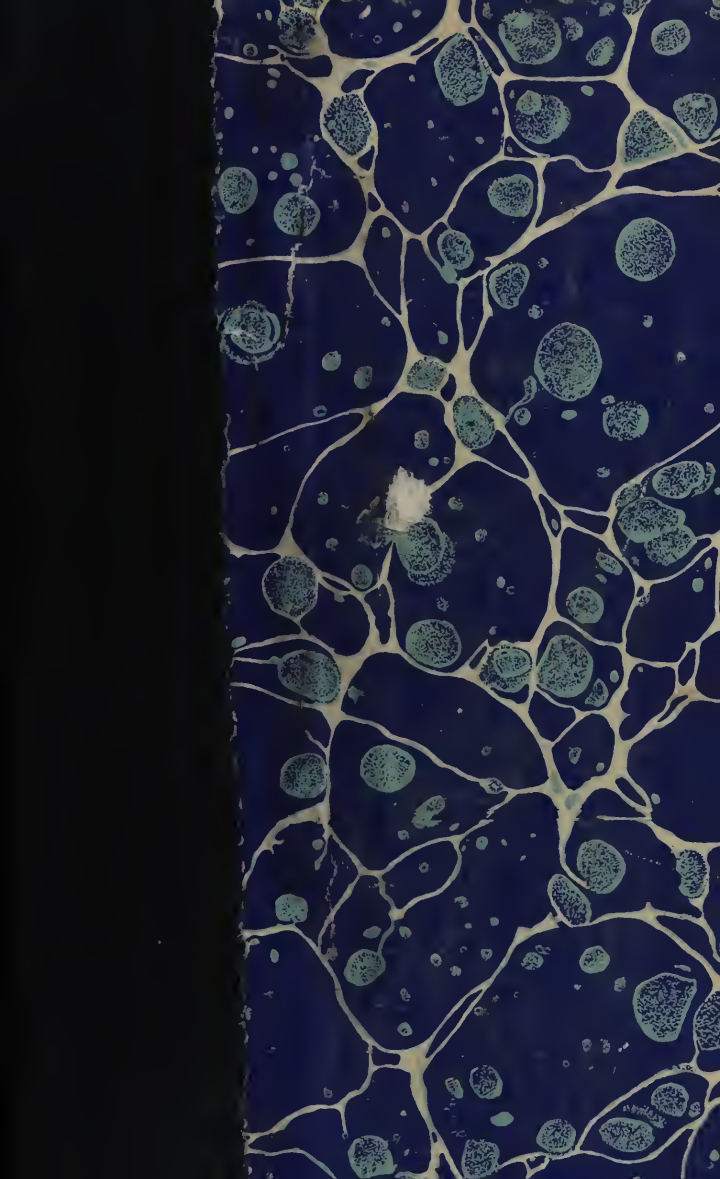

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PHRENOLOGY EXAMINED.

BY P. FLOURENS.

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CHARLES DE LIVENA MEIGS, M.D.

PHILADELPHIA:

[illegible]

[illegible]

PHRENOLOGY EXAMINED.

PHRENOLOGY EXAMINED.

BY P. FLOURENS,

MEMBER OF THE FRENCH ACADEMY, PERPETUAL SECRETARY OF THE ROYAL ACADEMY OF SCIENCES (INSTITUTE OF FRANCE), MEMBER OF THE ROYAL SOCIETIES OF LONDON AND EDINBURG, OF THE ROYAL ACADEMY OF SCIENCES OF STOCKHOLM, OF MUNICH, AND OF TURIN, ETC. ETC.
PROFESSOR OF COMPARATIVE PHYSIOLOGY AT THE NATURAL HISTORY MUSEUM AT PARIS.

"J'ai un sentiment clair de ma liberté."

BOSSUET, TRAITÉ DU LIBRE ARBITRE.

Translated from the Second Edition of 1845, by

CHARLES DE LUCENA MEIGS, M. D.

MEMB. AMER. PHIL. SOC. ETC. ETC.

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Phrenology

TO

DR. JAMES JACKSON,

OF BOSTON.

My dear sir:

Perhaps I have taken too great a liberty in sending to you in this public manner, and in praying you to accept a copy of M. Flourens' ingenious work. I have a very sincere desire that you should read the Inquiry; for I feel sure, that if you approve of it, the studious portion of our countrymen who may peruse it, will concur in the opinion of a gentleman so justly distinguished as yourself in every good word and work, and so capable of judging as

to the salutary or evil tendency of the productions of our teeming press.

Inasmuch as many of our countrymen have heretofore felt, and many do now feel, desirous to know the truth as to the question of the multiple nature of the human mind, I have here translated the Examination, in order that they might have an opportunity to learn what is thought of Gall's doctrines by one of the best and most precise thinkers in Europe.

Professor Flourens, by his writings on the brain and nervous system, by his courses of lectures at the Jardin des Plantes, by numerous writings on various scientific subjects, by his position in the Institute, has acquired a place among the literary and scientific celebrities of the present age. The amiable and elegant manners, and the fine disposition of this distinguished character, coincide with his acknowledged learning, and exactness, and zeal, to accumulate upon him the public respect and

esteem. It is therefore with great confidence that I present to you this copy of his criticism upon Phrenology, since I suppose that every writing of so good a man might prove acceptable to you, and to the studious portion of our countrymen generally.

I invoke your approbation of what I cannot but deem a masterly criticism of the doctrines of Gall. So highly have I appreciated it, that I cannot readily suppose it possible to rise from its perusal, without being convinced that Gall was wholly mistaken in his views of the human mind; and of course, that all the cranioscopists, mesmerizers, and diviners, who have followed his track, or risen up on the basis of his opinions, are equally in error.

In order to have a just view of human responsibility, it is indispensable to entertain the justest notions of the nature of the human mind. If Phrenology *be an unsubstantial hypothesis*, no phrenologist is fit to be a

juror, a judge, or a legislator: for since all human law—the whole social compact—and indeed all divine law, as relative to human propensities and actions—is founded on some real nature of the soul and mind, there is risk that manifestly erroneous conceptions of the free-will, of the conscience, of the judgment, and the perceptive powers, &c. may mislead the juror, the judge, and the legislator, in their vote, their opinion, and their notion of rights and wrongs.

If I am correct in entertaining these apprehensions as to the influence of false metaphysics on the public characters I have enumerated, there is abundant cause to rejoice when a blow is struck, like that pulverizing blow which is given in this work, to so considerable an error. There are thousands among the young and ardent and curious of our countrymen and countrywomen, whose minds may be likewise led astray from the truth; but if it be mis-

chievous for the judge and the juror and the legislator to entertain erroneous views upon the nature of the understanding, the mind, or the soul, it is equally to be deprecated where the error is sown broadcast in the land.

Tares, if not in themselves poisonous, serve at best to choke up the useful or beautiful plants that ought to be cultivated in the fields of science or morals; but you will find that M. Flourens regards them as poisons.

Has not M. Flourens clearly refuted the phrenologists? and has he not, in doing so, performed a useful and an acceptable service?

I pray you to believe that I am, with the most grateful respect and the sincerest esteem,

Your obliged and faithful servant,

CHARLES D. MEIGS.

Philadelphia, Dec. 10, 1845.

TO

THE MEMORY

OF

DESCARTES.

AUTHOR'S PREFACE.

Having been a witness to the progress of phrenology, I was led to the composition of the following treatise.

Each succeeding age has a philosophy of its own.

The seventeenth century recovered from the philosophy of Descartes; the eighteenth recovered from that of Locke and Condillac: is the nineteenth to recover from that of Gall?

This is a really important question.

I propose, in this work, to examine phrenology as it appears in the writings of Gall, of Spurzheim, and of Broussais.

My wish is to be brief. There is, however, one great secret in the art of being brief: it is to be clear.

I frequently quote Descartes: I even go further; for I dedicate my work to his memory. I am writing in opposition to a bad philosophy, while I am endeavouring to recall a sound one.

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I.

OF GALL.

OF HIS DOCTRINE IN GENERAL.

The great work in which Gall sets forth his doctrine is well known.* That work shall serve as the groundwork of my examination. I shall examine in succession each of the questions studied by the author; merely introducing some slight changes in the order in which they are arranged.

* Anatomie et Physiologie du système nerveux en général, et du cerveau en particulier, avec des observations sur la possibilité de reconnaître plusieurs dispositions intellectuelles et morales de l'homme et des animaux par la configuration de leurs têtes; 4 vol. 4to, avec planches. Paris, de 1810 à 1819.

The entire doctrine of Gall is contained in two fundamental propositions, of which the first is, that understanding resides exclusively in the brain, and the second, that each particular faculty of the understanding is provided in the brain with an organ proper to itself.

Now, of these two propositions, there is certainly nothing new in the first one, and perhaps nothing true in the second one.

Let us commence our examination with the first proposition.

I say that in the first proposition, namely, that the brain is the exclusive seat of the understanding, there is nothing new. Gall himself admits this to be the case.

"For a long time," says he, "both philosophers and physiologists, as well as physicians, have contended that the brain is the organ of the soul."* The opinion that the brain,

* T. ii. p. 217. "It is generally understood," says he further, "that the brain is the peculiar organ of the soul." T. ii. p. 14.

(as a whole, or such and such parts of the brain considered separately,) is the seat of the soul, is, in fact, as old as learning itself. Descartes placed the soul in the *pineal gland*, Willis in the *corpora striata*, Lapeyronie in the *corpus callosum*, &c. &c.

As to the more recent authorities, Gall quotes Sœmmerring, who says precisely that, "the brain is the exclusive instrument of all sensation, all thought, and all will,"* &c. He quotes Haller, who proves (proves is the very expression made use of by Gall himself,) that "sensation does not take place at the point where the object touches the nerve, the point where the impression is made, but in the brain."† He might have quoted many other authorities to the same effect.

Were not Cabanis's writings anterior to the

* Gall, t. ii. p. 221.

† Gall, t. ii. p. 222. Haller, Elem. Physiolog. etc., t. iv. p. 304. Sensus præterea sedem in cerebro esse, atque ad cerebrum per nervos mandari, alia sunt quæ ostendunt.

time of Gall? and did not he say, "In order to obtain a just idea of those operations whose result is thought, the brain must be considered as a peculiar organ designed to produce it, just as the stomach and the bowels are designed to produce digestion, the liver to secrete the bile," &c.?* a proposition so extravagant as to become almost ridiculous, but which is in truth the very proposition of Gall himself, except as to some exaggeration in the terms employed.

Antecedently to the time of Gall, both Sœmmerring and Cuvier, in the comparative anatomy of the various classes of animals, had investigated the ratio existing between the development of the encephalon and that of the intellectual power. The following remarkable phrase is from the pen of Cuvier: "The proportion of the brain to the medulla

* Rapports du Physique et du Moral de l'homme, IIe Mémoire, § vii.

oblongata, a proportion which is greater in man than in all other animals, is a very good index of the perfection of the creature's intelligence, because it is the best index of the pre-eminence of the organs of reflection above the organs of the external senses."* And this other still more remarkable phrase: "In animals the intelligence appears to be greater in proportion as the volume of the hemispheres is greater."†

Gall, in an especial manner, contends against the assertion of Bichat, who remarks that "The influence of the passions is exerted invariably upon the organic life, and not upon the animal life; all the signs that characterise them are referable to the former and not to the latter. Gestures, which are the mute exponents of the sentiments and the understanding, afford a remarkable proof of this truth. When we wish

* Leçons d'Anat. Comp. t. ii. p. 153.
† Ibid. p. 173.

to signify something relative to the memory, the imagination, to our perception, to the judgment, &c. the hand moves involuntarily towards the head: if we wish to express love, joy, grief, hatred, it is directed towards the region of the heart, the stomach, or the bowels."*

Doubtless, there is much that might be criticised in the foregoing words of Bichat; nevertheless, to say that the passions expend their influences upon the organic life, is not the same thing as to say that they reside or exist there. Bichat had already remarked, that "Every species of sensation has its centre in the brain, for sensation always supposes both impression and perception."† Furthermore, regarding this distinction, (which as yet has not been drawn with sufficient clearness,) between the parts that are the seats of the passions, and the parts that are affected by their action, Gall might

* Recherches Phys. sur la Vie et la Mort, art. vi. § ii.
† Ibid.

have found in Descartes the following remark, which is not less judicious than acute.

"Although," says he, writing to Leroy, "the spirits that move the muscles come from the brain, we must, nevertheless, assign as seats of the passions, the places that are most considerably affected by them; hence, I say, the principal seat of the passions, as far as they relate to the body, is the heart, because it is the heart that is most sensibly affected by them; but their place is in the brain, in as far as they affect the soul, for the soul cannot suffer immediately, otherwise than through the brain."*

As I am quoting Descartes, who, I ask, more clearly than Descartes has perceived that the soul can have only a very circumscribed seat in the economy, and that that circumscribed seat is the brain itself?

"We know," says he, "that, properly speak-

* Descartes, Lettre à Regius ou Leroy, t. viii. p. 515, edit. par M. Cousin.

ing, it is not inasmuch as the soul is in the members that serve as organs to the exterior senses, that the soul feels, but inasmuch as she is in the brain, where she exercises the faculty denominated common sense."*

He elsewhere observes: "Surprise is expressed because I do not recognise any other point of sensation except that which exists in the brain; but all physicians and surgeons will, I hope, assist me in proving this point, for they are aware of the common fact that a person who has been subjected to amputation of a limb, continues to feel pain in a part that he no longer possesses."†

Here then, according to Descartes, we find that the soul is situated, that is to say, *feels* in the brain, and only in the brain. The following passage shows with what precision he

* T. v. p. 34. "I remark," says he again, "that the mind does not receive the impression from all parts of the body, but from the brain only."—T. i. p. 344.

† T. vi. p. 347.

excluded even the external senses from any participation with the functions of the soul.

"I have shown," says he, "that size, distance, and form are perceived only by the reason; and that, by deducing them the one from the other."*

"I cannot agree with the assertion that this error (the error caused by the bent appearance of a stick partly plunged into water,) is not corrected by the understanding but by the touch; for, although the sense in question makes us judge that the stick is straight, yet that cannot correct the error of vision; but furthermore, it is requisite that reason should teach us to confide, in this case, rather to our judgment after touching, than to the judgment that we come to after using our eyes; but this reason cannot be attributed to the sense, but to the understanding alone; and in this very

* T. ii. p. 357.

example, it is the understanding that corrects the error of the sense."*

The brain, then, is the exclusive seat of the soul; and all sensation, even those operations that appear to depend upon the simple external sense, is function of the soul.

Gall falls back upon Condillac, who, much less rigorous in this particular than Descartes, says, that "all our faculties proceed from the senses."† But when Condillac speaks thus, he evidently speaks by ellipsis, for he immediately adds these words: "The senses are only occasional causes. They do not feel; it is the soul that alone feels, through the medium of the organs."‡

Now, if it be the *soul* only that feels, *à*

* T. ii. p. 358.

† "The principal object of this work," says he, "is to show how all our knowledge, and all our faculties come from the senses."—Traité des Sensations, préambule de l'Extrait Raisonné.

‡ Traité des Sensations, préam. de l'Extrait Raisonné.

fortiori, it is the soul only that *remembers*, that *judges*, that *imagines*, &c. *Memory*, *judgment*, *imagination*, &c., in a word, all our faculties, are therefore of the soul, and therefore come from the soul, and not from the senses.

There is no philosopher who has exaggerated more than Helvetius the influence of the senses upon the intelligence. But Helvetius says, "In whatsoever manner we interrogate experience, she always answers that any greater or lesser superiority of mind is independent of any greater or lesser perfection of the senses."*

But I leave Helvetius and Condillac, and I return to Descartes, to Willis, to Lapeyronie, to Haller, Sœmmerring, Cuvier, &c. They all perceived and all asserted that the brain is the seat of the soul, and that it is so to the exclusion of the senses. Therefore, the

* De l'homme, de ses facultés intellectuelles, etc. t. i. p. 186. Liege, 1774.

proposition that the brain is the exclusive seat of the soul is not a new proposition, and hence does not originate with Gall. It belonged to science before it appeared in his Doctrine. The merit of Gall, and it is by no means a slender merit, consists in his having understood better than any of his predecessors the whole of its importance, and in having devoted himself to its demonstration. It existed in science before Gall appeared—it may be said to reign there ever since his appearance. Taking each particular sense, he excluded them all, one after another, from all immediate participation in the functions of the understanding.* Far from being developed in the direct ratio of the intellection, most of them are developed in an inverse ratio. Taste and smell are more developed in the quadruped than in man. Sight

* He very properly distinguishes the senses from the understanding; but, as will be elsewhere seen, he endows each sense with all the attributes of the understanding. He escapes from one error only to fall into another.

and hearing are more so in the bird than in the quadruped. The brain alone is in all classes developed in the ratio of the understanding. The loss of a sense does not lead to the loss of the intelligence. The understanding survives the loss of sight and hearing. It might survive the loss of all the senses. To interrupt the communication between the sense and the brain, is enough to insure the loss of the sense. The mere compression of the brain, which abolishes the intellection, abolishes all the senses. Far, therefore, from being organs of the intelligence, the organs of the senses are not even organs of the senses, they do not even exercise their functions as organs of the senses, except through the medium of the intelligence, and this intelligence resides only in the brain.

The brain alone, therefore, is the organ of the soul;—is it the whole brain—the brain taken *en masse?* Gall thought so, and Spurzheim followed Gall's opinion; and all the

phrenologists who have come after them have followed the examples of Gall and Spurzheim.

Yet, after all, it amounts to nothing. If we deprive an animal of its cerebellum, it loses only its locomotive action. If we deprive it of its tubercula quadrigemina, it loses its sight only; if we destroy its medulla oblongata, it loses its respiratory movements, and in consequence thereof, its life.* Neither of these parts, therefore, that is to say, the cerebellum, the tubercula quadrigemina, and the medulla oblongata, is the organ of the understanding.

The brain, properly so called, is so, and it alone. If we remove from an animal the brain, properly so called, or the hemispheres, it immediately loses its understanding, and loses nothing but its understanding.†

The brain, en masse, the *encephalon*, is then

* See my Recherches Expérimentales sur les proprietés et les fonctions du Système Nerveux, 2d edit. Paris, 1842.

† Ibid.

a multiple organ; and this multiple organ consists of four particular organs: the cerebellum, the seat of the principle that regulates the movements of locomotion; the tubercula quadrigemina, seats of the principle that regulates the sense of sight; the medulla oblongata, in which resides the principle that determines the respiratory motions; and the brain proper, the seat, and the exclusive seat of the intelligence.*

Therefore, when the phrenologists promiscuously place the intellectual and moral faculties in the brain, considered en masse, they deceive themselves. Neither the cerebellum, the quadrigeminal tubercles, nor the medulla oblongata can be regarded as seats of these faculties. All these faculties dwell solely in the brain, properly so called, or the hemispheres.

The question as to the precise seat of the intelligence, has undergone a great change

* See my Recherches Expérimentales sur les proprietés et les fonctions du Système Nerveux, 2d edit. Paris, 1842.

since the time of Gall. Gall believed that the intelligence was seated indifferently in the whole encephalon, and it has been proved that it resides only in the hemispheres.

Further, it is not the encephalon taken en masse that is developed in the ratio of the intelligence of the creature, but the hemispheres. The mammifera are the animals most highly endowed with intelligence; they have, other things being equal, the most voluminous hemispheres. Birds are the animals most highly endowed with power of motion; their cerebellum is, other things being equal, the largest. Reptiles are the most torpid and apathetic of animals; they have the smallest brain, &c.

Every thing concurs then to prove, that the encephalon, in mass, is a multiple organ with multiple functions, consisting of different parts, of which some are destined to subserve the locomotive motions, others the motions of the respiration, &c., while one single one, the brain

proper, is designed for the purposes of the intellection.

This being conceded, it is evident that the entire brain cannot be divided, as the phrenologists divide it, into a number of small organs, each of which is the seat of a distinct intellectual faculty; for the entire brain does not serve the purposes of what is called the intelligence. The hemispheres alone are the seats of the intellectual power; and consequently, the question as to whether the organ, the seat of the intelligence may be divided into several distinct organs, is a question relative solely to the uses and powers of the hemispheres.

Gall avers, and this is the second fundamental proposition of his doctrine, that the brain is divided into several organs, each one of which lodges a particular faculty of the soul. By the word *brain*, he understood the *whole brain*, and he thus deceived himself. Let us reduce the application of his proposition

to the hemispheres alone, and we shall see that he has deceived himself again.

It has been shown by my late experiments, that we may cut away, either in front, or behind, or above, or on one side, a very considerable slice of the hemisphere of the brain, without destroying the intelligence. Hence it appears, that quite a restricted portion of the hemispheres may suffice for the purposes of intellection in an animal.*

On the other hand, in proportion as these reductions by slicing away the hemispheres are continued, the intelligence becomes enfeebled, and grows gradually less; and certain limits being passed, is wholly extinguished. Hence it appears, that the cerebral hemispheres concur, by their whole mass, in the full and entire exercise of the intelligence.†

* See my Recherches Expérimentales sur les proprietés et les fonctions du Système Nerveux.

† Ibid.

In fine, as soon as one sensation is lost, all sensation is lost; when one faculty disappears, all the faculties disappear. There are not, therefore, different seats for the different faculties, nor for the different sensations. The faculty of feeling, of judging, of willing any thing, resides in the same place as the faculty of feeling, judging, or willing any other thing, and consequently this faculty, essentially a unit, resides essentially in a single organ.*

The understanding is, therefore, a unit.

According to Gall, there are as many particular kinds of intellect as there are distinct faculties of the mind. According to him, each faculty has its perception, its memory, its judgment, will, &c., that is to say, all the attributes of the understanding, properly so called.†

* See my Recherches Expérimentales sur les proprietés et les fonctions du Système Nerveux.

† "From what I have now said, it clearly follows that the aperceptive faculty, the faculty of reminiscence, and that of

"All the intellectual faculties," says he, "are endowed with the perceptive faculty, with attention, recollection, memory, judgment, and imagination."*

Thus each faculty perceives, remembers, judges, imagines, compares, creates; but these are trifles—for each faculty *reasons*. "Whenever," says Gall, "a faculty compares and judges of the relations of analogous or different ideas, there is an act of comparison, there is an act of judgment: a sequence of comparisons and judgments constitutes reasoning," &c.†

Therefore, each and every faculty is an understanding by itself, and Gall says so expressly. "There are," says he, "as many different kinds of intellect or understanding as

memory, are nothing but attributes common to all the fundamental faculties."—Gall, t. iv. p. 319. "All that I have just said, is also applicable to the judgment and the imagination," &c.—Ibid. p. 325. "The sentiments and the propensities also have their judgment, their imagination, their recollection, and their memory."—Ibid. p. 327.

* Ibid. 328. † Ibid. 327.

there are distinct faculties."* "Each distinct faculty," says he, further, "is intellect or understanding — each *individual intelligence* (the words are precise) has its proper organ."†

But, admitting all these *kinds of intellects*, all these *individual understandings*, where are we to seek for the General Intelligence, the understanding, properly so called? It must, as you may please, be either an *attribute* of each faculty,‡ or the *collective expression* of all the faculties, or even the mere simple *result* of their common and simultaneous action;§ in one word, it cannot be that positive and single faculty which we understand, conceive of, and feel in ourselves, when we pronounce the word *soul* or *understanding*.

* Gall. t. iv. p. 339. † Ibid. p. 341.

‡ "The *intellectual faculty* and all its subdivisions, such as perception, recollection, memory, judgment, imagination, &c. are not fundamental faculties, but merely general attributes of them."—Gall, t. iv. p. 327.

§ "Reason," says Gall, "is the result of the simultaneous action of all the intellectual faculties."—Gall, t. iv. p. 341.

Now here is the sum and the substance of Gall's psycology. For the understanding, essentially a unit faculty, he substitutes a multitude of little understandings or faculties, distinct and isolate. And, as these faculties, which perform just as he wills them to do—which he multiplies according to his pleasure,* seem in his eyes to explain certain phenomena which are not well explained by the lights of ordinary philosophy, he triumphs!

He does not perceive that an explanation, which is words merely, adapts itself to any and to every thing. In the time of Malebranche, every thing was explained by *animal spirits;* Barthez explained every thing by his *vital principle,* &c.

"This," says Gall, "explains how the same man may possess a judgment that is ready and sure as to certain objects, while it is imbecile

* Gall enumerates twenty-seven of these faculties, Spurzheim enumerates twenty-five, &c.

as to certain others; how he may have the liveliest and most fruitful imagination upon some subjects, while it is cold and sterile upon others."*

"Grant," says he, further, "to the animals certain fundamental faculties, and you have the dog that follows the chase with *passion;* the weasel that strangles the poultry with *rage;* the nightingale that sings with *fervour* beside his mate,"† &c.

No doubt of it. But what sort of philosophy is that, that thinks to explain a fact by a word? You observe such or such a penchant in an animal, such or such a taste or talent in a man; *presto,* a particular faculty is produced for each one of these peculiarities, and you suppose the whole matter to be settled. You deceive yourself; your *faculty* is only a *word,* —it is the name of the fact,—and all the difficulty remains just where it was before.

* Gall, t. iv. p. 325. † Ibid. p. 330.

Besides, you speak only of the facts that you suppose yourself able to explain; you say nothing of those that you render by your system wholly inexplicable. You say not one word as to the unity of the understanding, the unity of the *me*, or you deny it. But the unity of the understanding, the unity of the *me*, is a fact of the conscious sense, and the conscious sense is more powerful than all the philosophies together.

Gall is always talking about observation, and he was indeed, as an observer, full of ingenuity. But, in order to follow out an observation, it must be traced to the very end, and we must accept all that it yields to our research; and observation every where gives, and shows every where, and above all things else, the unity of the understanding, the unity of the *me*.

Gall's philosophy consists only in transmuting into a particular understanding each

separate *mode** of the understanding, properly so called.

Descartes had already said, "There are in us as many faculties as there are truths to be known. . . But I do not think that any useful application can be made of this way of thinking; and it seems to me rather more likely to be mischievous, by giving to the ignorant occasion for imagining an equal number of little entities in the soul."†

It may well be supposed that Gall, who in the word understanding sees nothing but an abstract word, expressive of the sum of our intellectual faculties, would also, in the word *will*, perceive nothing more than an abstract word, expressing the sum of our moral faculties.

* "I find in myself," says Descartes, "divers faculties of thought, that have each their own way, . . . whence I conclude, they are distinct from me, as modes are distinct from things."—T. i. p. 332.

† T. viii. p. 169.

He had given a definition of *reason:* "The result of the simultaneous action of all the intellectual faculties."* In the same way he defined *will* to be "the result of the simultaneous action of the superior intellectual faculties."† But Gall always deceives himself; for reason and will are not *results*—they are *powers*, and primary powers of thought.

Gall, in a manner equally singular, defines *moral liberty* or *free will.*

"Moral liberty," says he, "is nothing more than the faculty of *being determined*, and of determining under motive."‡ Not so: liberty is precisely the power to determine against all motive. Locke well defined liberty as *power:* to be determined, is to allow one's self to be determined—that is, to *obey*.

Gall says again, "Unlimited liberty supposes not only that man governs himself indepen-

* Gall, iv. p. 341. † Ibid.
‡ Ibid. t. ii. p. 100.

dently of all law, but that he is the creator of his own nature."* Not at all; it supposes that he may have choice—and in fact he does choose.

Lastly, Gall says, "A phenomenon such as that of absolute liberty, would be a phenomenon occurring without any cause whatever."† Why without cause? The cause is in the power of choosing—and this power is a fact.

Gall's whole doctrine is one series of errors, which press upon each other cumulatively. He resolves that the part of the brain in which the understanding resides shall be divided into many small organs, distinct from each other; a physiological error. He decries the unity of the understanding, and looks upon the will and the reason as mere results—psycological errors. In the free will he perceives merely a

* Gall, t. ii. p. 97. † Ibid.

compulsory determination,* and consequently a mere result—this is a moral error.

Man's liberty is a positive faculty, and not the simple passive result of the preponderance of one *motive* over another *motive*, of one *organ* over another *organ*.†

Reason, will, liberty, are therefore, not as in Gall's doctrine, *positive faculties*, *active powers;* or rather, they are the understanding itself. Reason, will, liberty, are in fact the understanding, as *conceiving*, *willing*, *choosing*, or *deliberating*.‡

The consciousness which feels itself to be one, feels itself free. And you will remark, that these two great facts given out by the

* "It is a law of moral liberty, that man shall be always determined, and that he shall himself determine from the most numerous and most powerful motives."—T. ii. p. 137.

† "But an organ may act with greater energy, and furnish a more powerful motive."—T. ii. p. 104.

‡ "There is no person who, upon contemplating himself, does not feel and experience that will and liberty are one and the same; or rather, that there is no difference between that which is voluntary and that which is free."—T. i. p. 496.

inward sense, the consciousness, to wit, the unity of the understanding and the positive power of the free will, are precisely the two first facts denied by the philosophy of Gall.

And take good care to observe further, that if there be in us any thing that belongs to the *consciousness*, it is evidently and par excellence the sense of our personal unity; or what is more, the consciousness of our moral liberty.

Man is a moral force, only inasmuch as he is a free force. Any philosophy that attempts the liberty of man, attempts, without knowing it, morals itself. Man then is free, and as he is a moral agent only in proportion as he is free, it would seem that his liberty is the only attribute of his soul from which Providence has designed to remove all the boundaries.

"What is here very remarkable," says Descartes, "is that, of all within me, there is not one thing so perfect or so great, but that

I know it might be greater and more perfect. Thus, for example, if I consider my faculty of conceiving, I find it of very small extent, and very limited. If, in the same manner, I examine the memory, the imagination, or any other one of my faculties, I find not one that is not very limited and very small. Within me there is only my will or my liberty of free will, which I feel to be so great that I conceive not the idea of another more full and of greater extent."

* Descartes, t. i. p. 299. "It is always in our power to prevent ourselves from pursuing a good which is clearly known to us, provided we should think it a good to show in that way our free will."—Descartes, t. vi. p. 133. "The fulness of liberty consists in the great use of our positive ability to follow the worse, while we truly know the better."—Ibid. p. 138.

II.

OF GALL.

OF THE FACULTIES.

Gall's philosophy consists wholly in the substitution of *multiplicity* for *unity*. In place of one general and single brain,* he substitutes a number of small brains: instead of one general sole understanding, he substitutes several individual understandings.†

* The question here relates solely to the brain, properly so called, (the lobes or cerebral hemispheres.) The rest of the encephalon does not serve in the operations of the understanding. See the preceding article, p. 29, et seq.

† *Individual intelligences*—an expression of Gall's. "Each individual intelligence has its own proper organ."—iv. 341.

These pretended *individual understandings* are the *faculties.*

Now, Gall admits the existence of twenty-seven of these faculties, each one of them (since each one is a peculiar understanding) endowed with its perceptive faculty, its memory, its judgment, its imagination; &c.*

Hence, there are twenty-seven perceptive faculties, twenty-seven memories, twenty-seven judgments, twenty-seven imaginations, &c.

For, if we are to follow Gall, each attribute is not less distinct than each faculty. The memory, the judgment, imagination, &c. of one faculty are not the memory, judgment, or imagination of another faculty.

* Even the instincts, according to Gall, have their memory, imagination, &c. "The instinct of propagation, that of the love of offspring, pride, vanity, possess, beyond contradiction, their perceptive faculty, their recollection, their memory, judgment, imagination, and their own attention."—T. iv. p. 331. "The propensities and the sentiments likewise possess their judgment, their taste, their imagination, their recollection, and their memory."—iv. 344.

"The sense of numbers," says he, "possesses a judgment for the relations of numbers; the sense of the arts, a judgment for works of art; but where the fundamental faculty is wanting, the judgment relative to objects of that faculty must necessarily be wanting likewise."*

He says further: "It is impossible for an individual to possess imagination and judgment for any object with the fundamental faculty for which he has not been gifted by nature."†

Thus, beyond all doubt: there are twenty-seven faculties; and as there are twenty-seven faculties, there must be twenty-seven memories, judgments, imaginations, &c.

In one word, there is no such thing as a general understanding; but there are twenty-seven special understandings, with three or four times twenty-seven distinct attributes

* Gall, t. iv. p. 325. † Ibid.

of each. Such is the entire psycology of Gall.

To proceed. Gall's twenty-seven faculties are: the instinct of propagation, love of offspring, self-defence, the carnivorous instinct, the sense of property, friendship, cunning, pride, vanity, circumspection, memory for things, memory for words, sense of locality, sense of persons, sense of language, of relations of colours, relations of sounds, relations of numbers, of mechanics, of comparative sagacity, the metaphysical genius, sarcasm, poetic talent, benevolence, imitation, religion, firmness.

Gall says that these faculties are innate,* and this assertion certainly will not be contested.

Locke, who so vigorously opposed the doctrine of innate ideas, never decried the *innate-*

* See particularly t. ii. p. 5.

ness of our faculties. He always regarded them as natural, that is to say, *innate.**

Condillac himself, who charges Locke with having considered the faculties of the soul as *innate*, in making these charges confounds the *faculties of the soul* with the *operations of the soul.*†

Now, that which is perfectly true as to the *operations of the soul*, is by no means so as regards her *faculties.* All the faculties of the soul are innate and contemporary, for they are nothing more than *modes* of the soul; indeed,

* "Had I to do with readers wholly free from prejudice, I should, in order to convince them of this, (the supposition of innate ideas,) have nothing to do but show them that mankind acquire all the knowledge they possess by the simple use of their natural faculties."—Philos. Essay on the Human Understanding.

† "Locke contents himself," says he, "with acknowledging that the soul perceives, doubts, believes, reasons, knows, wills, and reflects: that we are convinced of the existence of these *operations;* . . . . but he seems to have regarded them as something innate." A short time before he had said, "We shall see that all the faculties of the soul appeared to him to be innate qualities."—Traité des Sensations. (Extrait raisonné.)

they are the soul itself, viewed under different aspects. But the operations of the soul succeed each other, and beget each other. There can be no memory without previous perception; there can be no judgment without recollection. In order that there may be a will, there must have been a judgment, &c.

After saying that the faculties are innate, Gall says also that they are *independent.**

And if, by the word *independent*, he means distinct, there is nothing less contestible. But if, by this word *independent*, he understood (as indeed he does understand) that each faculty is a real understanding, the question is altered and the difficulty begins.

For, if each individual faculty is a proper understanding, it follows that there are as many understandings as there are faculties, and the understanding ceases to be *one*, and

* See t. iii. p. 81.

the *me* is no longer *one*. I am well aware that this is exactly what Gall means; he says it, and reiterates it throughout his work. He says it, but does not prove it. And how should he prove it? Can we prove any thing against our consciousness?

"I remark here, in the first place," says Descartes, "that there is a great difference between the mind and the body, in that the body is, by its nature, always divisible, and the mind wholly indivisible. For, in fact, when I contemplate it—that is, when I contemplate my own self—and consider myself as a thing that thinks, I cannot discover in myself any parts, but I clearly know and conceive that I am a thing absolutely one and complete."*

Gall reverses the common philosophy, and it is worthy of remark, that the whole of his philosophy, which he thinks so novel,† is, to

* T. i. p. 343.

† "I may now flatter myself," says he, "that the reader is

the very letter, nothing more nor less than this very inversion. According to common philosophy, there is one general understanding—a unit; and there are faculties which are but modes of this understanding. Gall asserts that there are as many kinds of peculiar intelligences as there are faculties, and that the understanding in general is nothing more than a mode or attribute of each faculty. He says so expressly.

His words are: "The intellectual faculty and all its subdivisions, such as perception, recollection, memory, judgment, and imagination, are not fundamental faculties, but merely their general attributes."*

Gall first inverts the common philosophy, and then contends for the existence of all the consequences of that common philosophy.

sufficiently prepared for quite a new philosophy, deduced directly from the fundamental forces."—T. iii. p. 11.

* T. iv. p. 327.

He suppresses the *me*, but insists that there is a soul. He abolishes the freewill, and yet contends that there is such a thing as morals. He makes of the idea of God an idea that is merely relative and conditional, but yet asserts that there may be such a thing as religion.

I say he abolishes the *me;* for the *me* is the soul. The soul is the understanding, general and one; but if there be no understanding as general, there can be no soul.

According to Gall, there is nothing real and positive except the *faculties.*

And these faculties alone are possessed of organs. "None of my predecessors," says he, "had any knowledge of those forces which alone are the functions of special cerebral organs."*

By the contrary reasoning, neither the will, nor the reason, nor the understanding, are

* T. iv. p. 319.

possessed of any organs, for they are nothing but forces; they are nothing but nouns collective—words.

"These observations may suffice," says Gall, "to convince the reader that there cannot exist any special organ of the will, or the freewill."* He adds: "It is equally impossible that there should be any peculiar organ of the reason."†

Finally he says: "From all that I have now said it follows, that the idea of an organ of the intellect or understanding is quite as inadmissible as the idea of an organ of the instinct."‡

Hence there can be nought but the faculties; and, according to Gall, these faculties are so distinct, that he attributes to each particular one a separate organ.§ He divides the understanding into little understandings.

* T. iv. p. 341. † Ibid. ‡ Ibid.

§ "Each individual understanding possesses its own proper organ."—T. iv. p. 341.

Descartes expressed himself in the following words: "We do not conceive of any body, except as divisible; whereas the human mind cannot conceive of itself except as indivisible; for in fact we are incapable of conceiving of half a soul."* Gall, however, settles that point. He makes half souls. He retrenches or adds as many faculties as suits his plan. These faculties are separated by material limits. He goes so far as to say that such or such a faculty acts with greater or less facility upon such or such another faculty, according as one happens to be situated nearer to or farther off from the other.

"As the organ of the arts," says he, "is located far from that of the sense of colour, the circumstance explains why historical painters have rarely been colourists."†

Thus, we find that the faculties alone are

* T. i. p. 230. † T. iv. p. 105.

possessed of *forces*. These forces alone are endowed with organs; and these organs, by which they are kept separate from each other, separate them to distances sufficiently great to hinder, in certain cases, one given faculty from exercising any influence over another. Therefore, there is no such thing as unity; there is no unit faculty, no unit understanding; there is no *me;* and if there be no *me*, there can be no soul.

In the same way he abolishes the *free-will*. Will, liberty, reason, in his view,* are nothing but *results*, as I have already stated.

"To the end," says he, "that man may not be confined merely to the ability to wish—in order that he may actually will—the concurrence of several superior faculties is requisite. The motives must be weighed, compared, and

* See the preceding articles.

judged; the decision resulting from this operation is denominated will."*

"Reason," he further adds, "supposes a concerted action of the superior faculties. It is the judgment pronounced by the superior intellectual faculties."†

Hence, the will is nothing but a *decision;* reason is nothing but a *judgment.* The faculties *concert together.* What a singular philosophy, which always substitutes the fictions of language for the facts of the conscious sense, and which is satisfied with those fictions!

Freewill is either a power, a force, or it is nothing. He resolves that it is merely a *result.* Gall therefore abolishes the freewill.

Indeed, he makes of the idea of God nothing but a relative and conditional idea, for he sup-

* T. iv. p. 340. "From all these faculties comes at last decision. It is this decision . . . which is really will and wishing."—T. ii. p. 105.

† T. iv. p. 341.

poses that this idea comes from a particular organ; and he supposes that that organ may possibly, in some case, be wanting.

"It cannot be doubted," says Gall, "that the human race are endowed with an organ by means of which it recognises and admires the Author of the universe."*

"God exists," adds he, "for there is an organ to know and adore him."†

But he continues: "Climate and other circumstances may obstruct the development of the cerebral part, by means of which the Creator designed to reveal himself to his creature man."‡

Again: "If there were a people whose organization should be altogether defective in this respect, they would be as little susceptible as any other kinds of animal, of the religious idea or sentiment."§

* T. iv. p. 269.
† T. iv. p. 271.
‡ T. iv. p. 252.
§ T. iv. p. 252.

Further: "There is no God for beings whose organization does not bear the original stamp of determinate faculties."*

What! If I happen not to possess a little peculiar organ, (for it may be wanting,) can I not feel that God exists! And how can I be an intelligence, knowing myself, and yet not knowing that God is? I do not more strongly feel that I am, than that God is. "This idea," (the idea of God) says Descartes, "is born and produced along with me, just as is the idea of myself."†

My understanding, which perceives itself and feels itself to be an effect, necessarily perceives the intelligent Cause which produced it. "It is a very evident thing," says Descartes again, "that there must be at least as much reality in a cause as in the effect it produces; and since I am a thing that thinks,

* T. iv. p. 10. † T. i. p. 290.

whatsoever be in fact the cause of my being, I am compelled to confess, that *it also* is something that thinks."*

Hitherto I have considered Gall's philosophy only under its speculative points of view; what would it be, if considered in a practical relation?

In one of his happy moments, Diderot wrote the following very remarkable phrase: "The ruin of liberty overthrows all order and all government, confounds vice and virtue together, sanctions every monstrous infamy, extinguishes all shame and all remorse, and degrades and deforms without recovery the whole human race."†

Nothing astonishes a phrenologist.

"Let us imagine," says Gall, "a woman in whom the love of offspring is but little developed, . . if, unfortunately, the organ of murder

* T. i. p. 287.

† Article "Liberté," Diction. Encyclop.

be very much developed in her, need we be surprised if her hand . . . . . ."* &c.

Organization explains every thing.

"These last named facts show us," says Gall, "that this detestable inclination (the inclination to commit murder) has its source in a vice of the organization."†

"Let those haughty men," says he again, "who cause nations to be slaughtered by thousands, know that they do not act of their own accord, but that Nature herself has filled their hearts with rage and destructiveness."‡

No, indeed! This is not what they must know; for, thanks be to God, it is not true. What they ought to know, what they ought to be told, is, that although Providence has left to man the power to do evil, he has also endowed him with the power to do good. That which man ought to know, that which

* T. iii. p. 155. Such phrases cannot be concluded.
† T. iii. p. 213. ‡ Ibid. 219.

should be instilled into his mind and heart is, that he has a free power, and that this power ought not to be misdirected; and that he who in his own nature misdirects it, no matter under what form of philosophy he takes refuge, is a being who degrades his nature.

Under the title of *fundamental faculties,* Gall confounds all things together—the passions, the instinct, the intellectual faculties. These faculties, which are at the basis of his whole philosophy, he knows not even how to denominate them. He calls them instincts,* inclinations, senses, memories, &c. There is a memory or sense of things, a memory or sense of persons, &c. He confounds the instinct that leads certain animals to live in

* "This term, instinct, is applicable," says he, "to all the fundamental forces."—T. iv. p. 334. And he does not see that as to the instincts and the understanding all is contrast. Upon this difference of instinct and understanding, see my work De l'Instinct et de l'Intelligence des Animaux, etc. Paris, 1845, 2d edit.

elevated regions with pride, which is a moral sentiment in man;* the carnivorous instinct with courage;† he believes that conscience, (which is the soul judging itself,) is nothing but a modification of a particular sense, the sense of benevolence, &c.‡

The hesitation of his mind is visible every where.

* It is true that this approximation astonishes him. "The predilection of animals for elevated places depends," says he, "upon the same parts as pride, which is in man a moral sentiment! Let the reader imagine the astonishment excited in my mind by such a phenomenon."—T. iii. 311.

† "Co-existing with the love of war, it (the carnivorous instinct) constitutes the intrepid warrior."—T. iii. p. 258. "I know a head which, as to the organ of murder, approaches that of Madeline Albert, and the la Bouhours, except only that nature has executed it upon a grander scale. To witness suffering, is for this person to have the keenest enjoyment. Whoever does not love blood, is in his eyes contemptible."—T. iii. p. 259. The pen refuses to transcribe such things, which fortunately, however, are pure extravagances.

‡ "From my reflections it follows that conscience is nothing but a modification, an affection of the moral sense," (organ.)—T. iv. p. 210. "From all that I have said as to conscience, it follows that it can by no means be regarded as a fundamental quality: that it is really only an affection of the moral sense—or benevolence."—T. iv. p. 217.

"I leave it to the reader," says he, "to decide whether the fundamental faculty to which this penchant relates, should be denominated sense of elevation, self-esteem," &c.*

"To speak correctly," continues he, "firmness is neither a penchant nor a faculty; it is a mode-of-being, which gives to a man a distinctive quality, which is called character."†

Finally, he writes the following paragraph, perhaps the most singular one that he ever wrote, for it shows in the clearest manner how little confidence he had in his own psycology.

"If we are materialists because we do not admit the existence of a unit-faculty of the soul, but recognise several primitive faculties, we ask whether the ordinary division of the faculties of the soul into understanding, will, attention, memory, judgment, imagination, and

* T. iii. p. 321. † T. iv. p. 272.

affections and passions, expresses nothing more than a primitive unit-faculty? If it be asserted that all these faculties are merely modifications of a sole and same faculty, what can hinder us from making the same assertion as to the faculties whose existence we do admit."*

To be sure, nothing prevents you. Or rather every thing constrains you to do so. There is therefore one sole faculty, of which all the other faculties are but moods. You return then to the common philosophy, and consequently you no longer possess a peculiar philosophy.

The problem proposed by Gall is at the same time physiological, psycological, and anatomical.

In our first article an account has been given of Gall's *physiology*, and it has been shown to be generally disproved by direct

* T. ii. p. 287.

experiment. In the present one his *psycology* has been examined, and it is confuted by the consciousness (*le sens intime*). It only remains for us now to examine his *anatomy*.

III.

OF GALL.

THE ORGANS.

Of all Gall's writings, his anatomy is that which has been most talked of, and yet it is the part least known.

In the year 1808, Gall read to the first class of the Institute a memoir on the anatomy of the brain;* and M. Cuvier made a report upon that memoir. But neither in that memoir nor

* Recherches sur le système nerveux en général et sur celui du cerveau en particulier; mémoire présenté à l'Institut de France, le 14 Mars, 1808; suivi d'Observations sur le rapport qui en a été fait à cette compagnie par ses commissaires, par F. J. Gall et G. Spurzheim. Paris, 1809.

in the report do we find one word of *special anatomy*, of *secret anatomy*, of what might be called *anatomy of the Doctrine;* or, in other terms, and as it would be expressed at the present day, of *phrenological anatomy.*

The anatomy of Gall's memoir is nothing but a very ordinary anatomy. He insists that the cerebral nerves, all of them without exception, rise upwards from the medulla oblongata towards the encephalon; that the cineritious matter produces the white matter: he divides the fibres of the brain into *divergent* and *convergent;* he supposes that each convolution of this organ, instead of being a full and solid mass, as is generally thought, is merely a fold* of nervous or medullary fibres, &c. &c.

Such are the questions discussed by Gall; and it is sufficiently clear that, whatever side

* "The nervous membrane of the brain forms these folds, which are denominated its convolutions."—Anat. et Physiol. du Système Nerveux, t. iii. p. 82.

we take upon these questions, his doctrine assuredly would neither gain nor lose any thing.

Whether such or such a nerve ascends or descends; whether the white matter is produced by the gray; or whether, which is, to say the least, quite as probable, this be nonsense; whether this or that fibre goes out or comes in, diverges or converges, &c. &c. the doctrine of the plurality of brains, the doctrine of individual intelligences, will be neither more nor less true, more nor less doubtful.*

M. Cuvier, in his report, observed: "It is essential to repeat, were it merely for the information of the public, that the anatomical

* Spurzheim justly remarks: "Admitting that the direction of the fibres is known, that we know their consistence to be greater or less, that their colour is more or less white, that their magnitude is more or less considerable, &c. what conclusions can we, from all these circumstances, draw as to their functions? None at all."—Obser. sur la Phrénologie, ou la connaissance de l'homme moral et intellectuel fondée sur les fonctions du Système Nerveux, p. 83. Paris, 1818.

questions we have been considering, have no immediate and necessary connexion with the physiological doctrines taught by M. Gall, as to the functions and relative volume of different parts of the brain; and that all that we have inquired into as to the structure of the brain, might be either true or false, without affording the least conclusion in favour of or against the doctrine."*

It is necessary not to make any mistake as to the real point of the question. Gall's doctrine goes to establish one and only one thing, to wit, *the plurality of intelligences* and *the plurality of brains*.† That is what constitutes the special and peculiar doctrine;

* Rapport sur un Mémoire de MM. Gall et Spurzheim, rélatif à l'anat. du cerveau. Séances des 25 Avril et 2 Mai, 1808.

† "The determination of the fundamental forces and the seat of their organs constitutes the most striking portion of my discoveries. The knowledge of the primary faculties and qualities, and the seat of their material conditions, constitutes precisely the phrenology of the brain."—Gall, Anat. et Phys. du Syst. Nerv., t. iii. p. 4.

that is to say, different from the common doctrine, which admits but one understanding and a single brain. Whatever goes to prove the plurality of understandings and brains belongs to Gall's doctrine; and whatever does not tend to prove the plurality of understandings and brains is in opposition to that doctrine.

Gall's works then really contain two very distinct anatomies: one is a *general anatomy*, which has nothing in particular to do with his doctrine; the other is a *special anatomy*, which, supposing it to be true, would constitute the basis of his doctrine.

Now, a great deal has been said about Gall's general anatomy; but as to his special anatomy, I know of no one who has spoken of it. Gall himself says as little as possible about it. In other matters he tells his opinions both very clearly and very positively: in this particular we are obliged to guess at them.

When Gall, in his *psycology*, substitutes the

faculties for the understanding, he defines those *faculties.* He defines them, as we have already seen, to be *individual intelligences.* How happens it, then, that in his anatomy, when he substitutes the organs of the brain for the brain itself, he does not define these organs? How strange! Gall's whole doctrine, all *phrenology*, rests upon the *organs of the brain;* for, without distinct cerebral organs, there can be no independent faculties; and without independent faculties there can be no phrenology: and Gall does not say, nor has any phrenologist said for him, what is the thing called a *cerebral organ.*

The truth is: Gall never had any settled opinion upon what he called the organs of the brain; he never saw those *organs*, and he imagined them for the use of his *faculties.* He did what so many others have done. He commenced with imagining a hypothesis, and

then he imagined an anatomy to suit his hypothesis.

When the doctrine of animal spirits was believed, the brain was composed of pipes and tubes to convey these spirits.

"The cortical substance which is found in the hemispheres of the brain," says Pourfour du Petit, "furnishes the whole of the medullary portion, which is a mere collection of an infinite number of pipes."*

"The small arteries of the cortical part of the brain," says Haller, "transmit a spirituous liquor into the medullary and nervous tubes."†

It is evident that the *organs* of Gall have no more real existence than the *pipes* of Pourfour du Petit, or the *tubes* of Haller. They are two structures that have been imagined, as suitable for two hypotheses.

In searching for the primary idea, the secret

* Lettre d'un Médecin des Hôpitaux du Roi. Namur. 1710.
† Elementa Physiologiæ, t. iv. p. 384.

notion that led Gall to his doctrine of the *plurality of the intelligences*, I detect it in the analogy that he supposed to exist between the functions of the senses and the faculties of the soul.

He sees the functions of the senses constituting distinct functions, and insists that the faculties of the soul must constitute equally distinct faculties; he sees each particular sense possessing an organ proper to itself, and thinks that each faculty of the soul must have its proper organ;* in one word, he looks upon the outer man, and constructs the inner man after the image of the outer man.

According to Gall, every thing between an organ of a sense and an organ of a faculty, between a faculty and sense, is similar. A

* "But if it be supposed that each fundamental faculty, as well as each particular sense, is dependent on a particular part of the brain," &c. Gall, Anat. et Phys. du Syst. Nerv., t. iii. p. 392.

faculty is a sense. His words are: the *memory or the sense of things*, the *memory or the sense of persons*, the *memory or the sense of numbers*. He talks of the *sense of language*, the *sense of mechanics*, the *sense of the relations of colours*, &c. &c.

"As we must admit," says he, "five different external senses, since their functions are essentially different, ... so we must agree, after all, to acknowledge the different faculties and the different inclinations as being essentially different moral and intellectual forces, and likewise connected with organic apparatuses, which are special to each and independent of each other."*

"Who," says he, "can dare to say that sight, hearing, taste, smell, and touch, are simple modifications of faculties? Who could dare to derive them from a single and same

* T. iv. p. 9.

source, from a single and same organ? In the same way, the twenty-seven qualities and faculties which I recognise as fundamental or primary forces, ... cannot be regarded as the simple modifications of any one faculty."*

On the one hand, Gall gives to the *faculties* all the independence of the *senses;* and on the other, he gives the *senses* all the attributes of the *faculties.*

"Here," says he, "are new reasons why I have always maintained in my public discourses, though these assertions are in opposition to the ideas that prevail among philosophers, that each organ of a sense possesses absolutely its own functions; that each of these organs has its peculiar faculty of receiving and even of perceiving impressions, its own conscience, its own faculty of reminiscence,"† &c.

* T. iv. p. 9.

† T. ii. p. 234.

Gall did not foresee that a physiological experiment (and a very sure one it is) would one day demonstrate that the sense receives the impression but does not perceive it, and that, consequently, it is endowed neither with *conscience* nor *reminiscence*, &c.

When the cerebral lobes or hemispheres* are removed from an animal, the animal immediately loses its sight.

And yet nothing, as regards the eyes themselves, has been changed; objects continue to be depicted upon the retina, the iris retains its contractility, and the optic nerve its excitability. The retina continues to be sensible of light, for the iris contracts or dilates according as the light admitted to it is more or less intense.

No change has taken place as to the structure of the eye, and yet the animal does not

* The brain, properly so called.

see! Therefore it is not the eye that perceives, nor is it the eye that sees.*

The eye does not see; it is the understanding that sees by means of the eyes.†

When Gall concludes from the independence of the external senses to the independence of the faculties of the soul, he confounds, as to the sense itself, two things that are essentially distinct, impression and perception. Impression is multiple; perception is single.

When the hemispheres are removed, the animal instantly loses its perception; it no longer sees nor hears,‡ &c. notwithstanding all the organs of the senses, the eye, the ear, &c. subsist, and the impressions take place.

Therefore the principle that perceives is *one*. Lost for one sense, it is lost for all the senses.

* *I* see with *my* eyes.—M.

† See my Recherches Expérimentales sur les propriétés et les fonctions du Système Nerveux, 2d edit. 1842.

‡ Ibid.

And if it be *one* for the external senses, how can it be other than *one* for the faculties of the soul?

Gall therefore cannot suppose the existence of several distinct principles for the faculties of the soul, otherwise than because he supposes several distinct principles for the perceptions; and he only supposes several principles for the perceptions because he confounds impression with perception. The whole of his psycology arises from a mistake; and the whole of his anatomy is constructed for the sake of his psycology.

In psycology he endeavours to prove that the faculties of the soul are merely *internal senses;* in anatomy, he endeavours to prove that the organs of the faculties of the soul only repeat and reproduce the organs of the *external senses.*

Now an *organ*, that is to say, under the present point of view, the *nerve* of an *external*

sense, is nothing more than a *fascicle* of *nervous fibres*. Therefore the brain, under the theory, can be nothing but a collection of *fascicles* of *fibres*.*

According to Gall, the origin, the development, the structure and mode of termination, as to the organs of the faculties of the soul and the organs of the external senses, every thing is similar, every thing is in common. And yet the primitive difficulty remains unsolved.

When I say an *organ of the senses*, I speak of a very determinate nervous apparatus. But is the same thing true when I say an organ of the brain? What is an organ of the brain? Is it a *fascicle* of *fibres?* Is it each particular fibre? But if it be a *fascicle* of *fibres*, there are too few of them, for there are not twenty-seven of them; and twenty-seven are neces-

* See at the end of this work the first Note on Gall's Anatomy.

sary, for there are twenty-seven faculties. If it be each particular fibre, then there are too many of them, and far too many, because there are only twenty-seven faculties. What are we to do in this difficulty? We must do as Gall does: sometimes say it is a fascicle of fibres; at other times, that it is each fibre in particular.

In one place he says: "The brain consisting of several divisions whose functions are totally different, there are several primary bundles, which contribute by their development to produce it. Among these bundles we place the anterior and posterior pyramids, the bundles that come off direct from the corpora olivaria, and some others that are concealed in the interior of the medulla oblongata."*

* T. i. p. 271. Spurzheim explains himself in like manner. "The organs of the internal faculties are as separate as the bundles of the nerves of the five senses."—Observ. sur la Phrénol., &c. p. 74. "It is found that the brain is composed of many bundles, which must have their functions."—Ibid. p. 94. "The organs

And there are yet some others; be it so; but they never can amount to twenty-seven.

Again he says: "A more extensive development of the same conjecture, might perhaps dispose the reader to consider each nervous fibrilla, whether in the nerves or in the brain itself, as a little special organ."*

Even this is not all. For the sake of Gall's doctrine, the anatomy of the brain must have a connexion with cranioscopy. And Gall takes great care to place all his organs upon the surface of the brain.

"The possibility of a solution of the problem under consideration," says he, "supposes the organs of the soul to be situated at the surface of the brain."† Indeed, were they not situated at the surface of the brain, how

. . . . are composed of divergent bundles, of convolutions, and of the commissures."—Ibid.

* T. iv. p. 8. "Bonnet believes, and it is probable, that each nerve fibre has its own proper action."—Ibid.

† T. iii. p. 2.

could the cranium bear the impression of them? and what would become of cranioscopy?

Cranioscopy has nothing to fear. Gall has made provision for it; all the organs of the brain are placed at the surface of the brain; and Gall most judiciously adds, "This explains the relation or the correspondence that exists between craniology and the doctrine of the cerebral functions (cerebral physiology), the sole aim and end of my researches."*

But as to the pretended *organs of the brain*, are they really situated at the surface of the brain, as Gall asserts? In plain terms, is the surface of the brain the only active part of the organ? Here is a physiological experiment that shows how very much mistaken Gall is.

You can slice off a considerable portion of

* T. iii. p. 4.

an animal's brain, either in front, behind, on one side, or on the top, without his losing any one of his faculties.*

The animal may, therefore, lose all that Gall calls surface of the brain, without losing any of his faculties. Therefore it cannot be that the organs of the faculties reside at the *surface of the brain.*

And comparative anatomy is not less opposite to Gall's opinions than is direct experiment itself. I shall not follow him here in the detail of his localizations. How could these localizations have any meaning? He does not even know whether an organ is a *fascicle of fibres*, or a *fibre.*†

For example; he places what he calls the

* See my Recherches Expérimentales sur les propriétés et les fonctions du Système Nerveux, 2d edit. 1842. See also the first article of this work.

† It must, however, be one or the other; for it must be something. Might it be a convolution, as has been since said? But there are not seven and twenty convolutions, &c. &c.

instinct of propagation in the cerebellum, and what he calls the *instinct of the love of offspring*, in the posterior cerebral lobes; and he looks upon these two localizations as the very surest in his book.

"I should wish," says he, "that all young naturalists might begin their researches with the study of these two organs. They are both easily to be recognised,"* &c.

What! The cerebellum, so different in its structure from the great brain, is the cerebellum, like the brain,† to be considered an organ of instinct? And what is more, is it to be regarded as the organ of a single instinct

* T. ii. p. 163.

† Gall, as we have seen, confounds understanding with instinct. Literally, he divides understanding into many instincts, and then out of each instinct constructs an intellectual faculty. See the second article of this work. "The term instinct suits all the fundamental facultics."—T. iv. p. 334. For the characters peculiar to the instincts, see my work entitled "De l'Instinct et de l'Intelligence des Animaux," 2d edit. 1845.

only, while the brain shall have twenty-six of them?

I have already said that the cerebellum is the seat of the principle that presides over the locomotion* of the animal, and that it is not the seat of any instinct.

Gall places the love of offspring in the posterior lobes of the brain.† Now, the love of offspring, and especially maternal love, is every where to be found among the superior animals; it is found in all the mammifera, in all the birds.‡ The posterior lobes of the brain, therefore, ought to be found in all these beings. Not at all: the posterior lobes are wanting in most of the mammifera; they are wanting in all the birds.

Gall locates the faculties that are common to

* See my Recherches Expérimentales sur les proprietés et les fonctions du Système Nervoux, 2d edit. 1842.

† "The organ of philogeniture, or the last convolution of the cerebral lobes."—Spurzheim, Obser. sur la Phrén., &c. p. 117.

‡ With very few exceptions.

both man and animals, in the posterior part of the brain; in the anterior part he places those* that are peculiar to man alone. According to this plan, the most *persistent* portion of the brain will be the posterior portion, and the least persistent the anterior portion. But the inverse of the proposition holds. The parts that are most frequently wanting are the *posterior parts*, and those that are most invariably present are the *anterior parts*.†

If, from the brain, I pass on to consider the cranium, all the foregoing is found to be of

* "The qualities and faculties common to man and animals, are situated in the posterior portions," &c.—T. iii. p. 79, and t. iv. p. 13. "The qualities and faculties that man exclusively enjoys, are situated in the cerebral portions, of which the brute creation is deprived; and we must consequently seek for them in the antero superior portion of the frontal bone."—T. iii. page 79.

† "The anterior parts of the brain are not wanting in the mammifera, but the posterior parts," says Leuret, very justly, in his fine work on the circumvolutions of the brain, entitled, Anat. Compar. du Syst. Nerveux, consideré dans ses rapports avec l'Intelligence, t. i. p. 588. Paris, 1839.

still greater force. How can the localizations that are destitute of meaning as to the brain —how can they, I say, have any meaning as relative to the cranium itself?

The cranium, especially the external surface of it, represents the superficial configuration of the brain but very imperfectly. Gall knows it. "I was the first," says he, "to maintain that it is impossible for us to determine with exactitude the development of certain circumvolutions, by the inspection of the external surface of the cranium. In certain cases, the exterior lamina of the cranium is not parallel with the internal lamina."* "There are certain species in which there is no frontal sinus; in others, the cells betwixt the two bony laminæ are found throughout the whole skull,"† &c. &c.

The cranium represents the convolutions of

* T. iii. p. 20. † T. iii. p. 26.

the brain only upon its inner surface; it does not represent them upon its external superficies. And as to the *fibres*, as to the *bundles of fibres*, it does not even represent them on its inner surface; for the fibres are covered with a layer of gray matter, and the bundles of fibres are situated in the interior of the nervous mass.

Gall is aware of all this, and nevertheless he inscribes his twenty-seven faculties upon the skulls.* Such confidence surprises one. Nothing is known of the intimate structure of

* It is curious to see how M. Vimont, a very decided phrenologist as well as an able anatomist, expresses himself on the subject of the *localizations* of Gall and Spurzheim. "Gall's work," says M. Vimont, "is fitter to lead into error than to give a just idea of the seats of the organs."—Traité de Phrén. t. ii. p. 12. "Gall says he has remarked, that horses whose ears are widely separated at the roots, are sure-footed and courageous. Possibly the fact may be true; but I cannot comprehend the connexion that may exist betwixt the outward mark and the quality of courage, whose seat, in the horse, Gall indicates at a point where there is no brain."—Ibid. 281. "Spurzheim indicates the region of the frontal sinuses as the seat of gentleness, while courage is located upon the muscles that go to be inserted on the os occipitis."—Ibid. p. 117. Such are M. Vimont's

the brain,* and yet people are bold enough to trace upon it their circumscriptions, their circles, their boundaries. The external surface of the skull does not represent the brain's

remarks, yet this same M. Vimont inscribes the following twenty-nine names on the skull of a goose!

1. Conservation.
2. Choice of aliment.
3. Destruction.
4. Cunning.
5. Courage.
6. Choice of locality.
7. Concentration.
8. Attachment to life, or marriage.
9. Attachment.
10. Reproduction.
11. Attachment to the product of conception.
12. Property.
13. Circumspection.
14. Perception of substance.
15. Configuration.
16. Extent.
17. Distance.
18. Geometrical sense.
19. Resistance.
20. Localities.
21. Order.
22. Time.
23. Language.
24. Eventuality.
25. Construction.
26. Musical talent.
27. Imitation.
28. Comparison.
29. Gentleness.

"All this upon the cranium of a goose!" says M. Leuret upon this occasion, (page 355.) "And there is no place so small but it is occupied. . . . . The faculties are so crowded," adds he, "that it would be a marvellous thing to be able to write their names upon the brain. . . . . It would be a greater marvel to discover them."

* Gall himself says: "In whatever region we examine the two substances that compose the brain, it is with difficulty that we can discern any difference between them as to their structure, &c."—T. iii. p. 70.

surface, it is admitted; and yet they inscribe upon this surface twenty-seven names, each of which names is written within a small circle, each little circle corresponding to one precise faculty! And what is stranger yet, people are to be found who, under each of these names inscribed by Gall, imagine that there is concealed something more than a name!

Those who, seeing the success of Gall's doctrine, imagine that the doctrine therefore rests upon some solid foundation, know very little of mankind. Gall knew mankind better. He studied them in his own way, but he studied them very closely. Let us hear his own words:

"In society, I employ many expedients to find out the talents and inclinations of people. I start the conversation upon a variety of topics. In general, we let fall in conversation whatsoever has little or no concern with our faculties and penchants; but when the interlocutor touches upon one of our favourite

subjects, we at once become interested in it... Do you wish to spy out the character of a person, without the fear of being misled as to your conclusions, even though he might be on his guard? Set him to talking about his childhood and boyhood; make him relate his schoolboy exploits; his conduct towards his parents, his brothers and sisters, and his playfellows, and his emulators.... Ask him about his games, &c. Few persons think it necessary to dissemble upon these points; they do not suspect they are dealing with one who knows perfectly well that the basis of character remains ever the same; and that the objects only that interest us change with the progress of years..... Besides, when I discover what it is that a person admires or despises; when I see him act; when he is an author, and I merely read his book, &c. &c. the whole man stands unveiled before me."*

* T. iii. p. 63.

Descartes *shut himself up in a stove*,* in order that he might meditate. According to Gall, there is no necessity for one's shutting himself up in a stove.

Descartes says: "Now I shall shut my eyes, I shall stop my ears, I shall turn my senses aside; I shall even efface from my memory every image of corporeal objects, or at least, as that can hardly be done, I will repute them as vain and false; and thus, shut up within myself, and contemplating what is within me, I shall endeavour gradually to become more and more familiarly acquainted with my own real nature."†

According to Gall, there is no occasion for this absolute gathering one's self together within. All that is needful is to look at and touch the skulls of people. Gall's doctrine succeeded just as Lavater's did. Men

* "I remained a whole day shut up in an oven."—T. i. 133.
† T. i. p. 263.

will always be looking out for external signs by which to discover secret thoughts and concealed inclinations: it is vain to confound their curiosity upon this point: after Lavater came Gall; after Gall some one else will appear.

We soon become wearied of a true philosophy, because it is true; because the search after truth, of whatsoever kind, requires strenuous and continual efforts. It is impossible, moreover, always to have the very same philosophy: even the same philosopher cannot be always approved of. Approbation must change its object, especially in France.

It was for the French that Fontenelle wrote these words: "The approbation of mankind is a sort of forced state, which seeks nothing so much as to come to an end."*

Descartes goes off to die in Sweden, and Gall comes to reign in France.

* Eloge de Tournefort.

IV.

OF SPURZHEIM.

Spurzheim published two works; the first of which is entitled, "Observations sur la Phrénologie, ou la connaissance de l'homme moral et intellectuel, fondée sur les fonctions du système nerveux:"* the title of the second is, "Essai philosophique sur la nature morâle et intellectuelle de l'homme;"† and these two works are merely a reproduction of the doc-

* One volume, 8vo. Paris, 1818. Phrenology is the very name given by Spurzheim to the doctrine of Gall.

† One volume, 8vo. Paris, 1820.

trine of Gall. Spurzheim makes Gall's book over again—the same book that they commenced together—and abridges it.

Spurzheim tells us how he heard Gall, and having heard him, felt himself drawn to participate in his labours, and propagate his doctrine.

"In 1800, I attended for the first time a course of lectures which M. Gall had from time to time repeated at Vienna for four years. He spoke then of the necessity there was for a brain to give out the manifestations of the soul; and of the plurality of organs; .... but he had not as yet begun to examine into the structure of the brain.* From the very first, I found myself much attracted by the doctrine of the brain; and from the period of my first attention to that subject to the present moment, I have never lost sight of it as an

* Observ. sur la Phrénol. &c. p. 8.

object of study. After finishing my studies in 1800, I joined M. Gall, in order to pursue in a special manner the anatomical part of the researches.* In 1805, we left Vienna for the purpose of travelling together; from which time, up to the year 1813, we made our observations in common," &c.†

In fact, the two authors, uniting their labours, first published, in 1808, their fine memoir upon the anatomy of the brain,‡ and subsequently, in 1810 and 1812, the two first volumes of Gall's great work.§

In the year 1813 they separated, and that separation even proved useful. Gall, when writing independently, has a freer movement. Had he continued united with Spurzheim, he

* Observ. sur la Phrén. p. 20.

† Ibid. p. 22.

‡ Rech. sur le Syst. Nerv. en général, &c. par F. J. Gall et G. Spurzheim.

§ Anat. et Phys. du Syst. Nerveux, &c., the work which has been examined in the three preceding articles.

either would not have written the last chapter of his fourth volume, or he would have written it very differently, and we should not have obtained the definite expression of his doctrine.

That chapter, entitled "Philosophy of Man," is Gall's philosophy entire. It is in that chapter that he says what he does understand by faculties, by understanding, by will, &c. &c. and it is there that he defines the faculties of the individual understandings;* understanding, a simple *attribute of each faculty;*† will, a simple result of the simultaneous action of superior faculties, &c.‡

Spurzheim never would have imagined the doctrine: he found it already concocted; he follows it, and in doing so, always hesitates. He did not imagine it; and perhaps never could have had the facilities enjoyed by Gall for carrying it successfully into the world.

* T. iv. p. 341.
† Ibid. p. 327.
‡ Ibid. p. 341.

Gall's mind was full of address. We have seen his method of studying men.* In his great work there is a dominant tone of philosophy; for the doctrine was already established at the period of the publication of that work. When the doctrine was inchoate, Gall's tone was not quite so grave, for it is above all things necessary to awaken the public curiosity, and the philosophic tone does not answer for that purpose.

Charles Villers has preserved some of his souvenirs, touching the first impressions produced by the doctrine.† "If," writes Gall at the period in question, "the exterminating angel was under my orders, wo to Kæstner, to Kant, to Wieland, and others like them. . . . Why is it, that no one has ever preserved

* In the preceding article, p. 93.

† Lettre de Charles Villers à Georges Cuvier, sur une nouvelle théorie du cerveau, par le Docteur Gall, &c. Metz, 1802.

for our times, the skulls of Homer, Virgil, Cicero, &c. ?"*

"At one time," says Charles Villers, "every body in Vienna was trembling for his head, and fearing that after his death it would be put in requisition to enrich Dr. Gall's cabinet. He announced his impatience as to the skulls of extraordinary persons—such as were distinguished by certain great qualities or by great talents—which was still greater cause for the general terror. Too many people were led to suppose themselves the objects of the doctor's regards, and imagined their heads to be especially longed for by him, as a specimen of the utmost importance to the success of his experiments. Some very curious stories are told on this point. Old M. Denis, the Emperor's librarian, inserted a special clause in his will, intended to save his cranium from M. Gall's scalpel."†

* Lettre de Charles Villers, &c. p. 34. † Ibid.

Gall and Spurzheim differ from each other upon several points: upon the offices of the external senses; upon the names of the faculties of the soul; upon their number; and upon the classification of the faculties, &c. Let us examine a few of the points more particularly.

1. *Offices of the external senses.* "M. Gall is disposed," says Spurzheim, "to attribute to the external senses, as well as to each and every internal faculty, not only perception, but also memory, reminiscence, and judgment. . . . . It seems to me that such facts (the facts cited by Gall) do not prove the conclusion. In the first place, memory, being nothing more than the repetition of knowledge, must have its seat in the point where perception takes place. The impressions of the nerves that give rise to the sensation of hunger, &c. are indisputably perceived in the head, which likewise has the reminiscence of hunger. . . . .

I do not believe we can conclude that the eyes or the ears are the seats of reminiscence."*

Spurzheim is right, as we have sufficiently seen;† perception is not in the organ of the sense.

But the error that Spurzheim combats is not the whole of Gall's error; it is only a particular and secondary error:‡ the error that he does not perceive, the error that he follows, is a general and capital one. From the independence of the external senses, Gall concludes the independence of the faculties of the soul: he reasons upon an apparent analogy, which conceals a profound dissimilitude; and Spurzheim reasons just as Gall does.

"In the nervous system," says he, "we find the five external senses separate and

* Observ. sur la Phrén., &c. p. 10.

† Especially in the last article.

‡ And which was not taken up by Gall, except from the necessity he was under of assimilating at all points the external senses with the faculties of the soul.

independent of each other."* "The faculties of the external senses are attached to different organs; they may exist separately. The same holds true of the internal senses."† "We assert that there is a particular organ for each species of sentiment or thought, as there is for each species of exterior sensation."‡

Like Gall, Spurzheim denominates the faculties of the soul *internal senses;* in the same spirit he says: "The *sense of colour*, the *sense of number*, *sense of language*, *sense of comparison*, *sense of causality*,"§ &c. &c.

Both authors begin by calling the faculties of the soul *internal senses;* and then, misled by the word, they conclude from the *independence of the external senses*, to the *independence* of their *internal senses;* that is to say, the independence of the faculties of the soul.

* Observ. sur la Phrén., &c. p. 65. † Ibid. p. 67.

‡ Ibid. p. 75.

§ See particularly the Essai philosophique sur la morale et intellectuelle de l'homme, p. 54, et seq.

2. *Names of the faculties.* Spurzheim accuses Gall of having given denominations only to actions, and not to the principles of those actions.

"Finding," says he, "a relation betwixt the development of a cerebral part and a sort of action, M. Gall denominated the cerebral part from the action; thus, he spoke of the organs of music, poetry, &c."* "The nomenclature," says he further, "ought to be conformed to the faculties, without regard to any action whatever.... When we attribute to an organ cunning, management, hypocrisy, intrigue, &c. we do not make known the primary faculty which contributes to all these modified actions."†

Gall replies: "M. Spurzheim cannot have forgotten how often we reasoned without end, with a view to determine the primitive desti-

* Observ. sur la Phrén. p. 17. † Ibid. p. 127.

nation of an organ. . . . . I confess, that there are several organs, with whose primary faculties I am not yet acquainted; and I continue to denominate them from the degree of activity that led me to the discovery of them. M. Spurzheim thinks himself more fortunate: his metaphysical temperament has led him to the discovery of the fundamental or primitive faculty of every one of the organs. Let us put it to the proof."*

Indeed, Spurzheim's expedient for rendering himself master of the primary faculties is very simple. He creates a word: he calls the instinct of propagation *amativity*, the propensity to steal, *convoitivity;* courage is *combativity*, &c. &c.

Gall and Spurzheim talk a great deal about nomenclature; but they do not perceive, that as to nomenclature, the first difficulty, and

* Anat. et Phys. du Syst. Nerv., &c. t. iii. p. 19. This volume came out the same year as Spurzheim's Observ., &c.

indeed the only one, is to get at simple facts. Whoever has come to simple facts, is very nigh to a good nomenclature.

Descartes says: "Had some one clearly explained the simple ideas that exist in the imagination of men, and which constitute all that they think, I should venture to hope for a language that it would be very easy to learn, ... and, which is the principal matter, that would assist the judgment, representing to it things so distinctly that it would be almost impossible for it to be deceived; whereas, on the contrary, the words we now have possess, so to speak, only confused significations, to which the human mind has been so long accustomed, that it therefore understands scarcely any thing perfectly well."*

3. *Number of the faculties.* Spurzheim adds eight faculties to those established by

* T. iv. p. 67.

Gall, and Gall is vexed by it. One does not see why.

What! Shall Gall endow twenty-seven faculties, and Spurzheim not have the same privilege for seven or eight?* Shall Gall have a faculty for *space*, one for *number*, &c. and Spurzheim be refused one for *time*, one for *extent*, &c.? Is not Spurzheim half right, when he says:

"One does not readily perceive why M. Gall should desire to suggest to his readers that his

* The eight organs added by Spurzheim, are the organs of habitativity, order, time, right, supernaturality, hope, extent, weight. Gall's remarks upon these eight organs proposed by Spurzheim are as follows: "M. Spurzheim, it is true, recognises eight organs more than I admit. As to the organs of habitativity, order, time, and supernaturality, I have already spoken. I admit an organ of the moral sense, or sense of right (*juste*), but I have very strong reasons for believing that benevolence is nothing more than a very strong manifestation of the moral sense; therefore I treat these two organs under the rubric of a single organ. What M. Spurzheim says on the organs of hope, of extent, and of weight, has not as yet convinced me: and, in fact, he has hitherto proved nothing in respect to them."—T. iii. p. 25.

method of treating the doctrine of the brain is the only admissible one, and that there are no other organs than those he has recognised; that the organs do nothing but what he attributes to them; .... that all he says and all he does (and that only) bears the stamp of perfection; and that his decision constitutes the supreme law."*

4. *Classification and attributes of the faculties.* Gall, by giving the same attributes to all the faculties, and to each faculty all the attributes of the understanding, in fact forms out of the faculties only two groups: the group of faculties that he supposes common to man and the animals, and the group of faculties that he supposes to be proper to man alone. Spurzheim divides and subdivides them.

None of the formulas required for the classification agreed upon are omitted.†

* Essai Philosophique, &c. p. 216.

† See the Essai Philosophique, &c. p. 47, et seq.

In the first place, there are two *orders* of faculties: the *affective* and the *intellectual faculties;* then each of these *orders* is divided into *genera.* The first *order* has two *genera:* the affective faculties common to man and animals,* and the affective faculties peculiar to man alone.† The second has three genera: the faculties or *internal senses* which make external objects known;‡ the faculties or internal senses which make known the relations of objects in general;§ and the faculties or internal senses that *reflect.*‖

* The sense of Amativity, the sense of Philogeniture, the sense of Destructivity, the sense of Affectivity, the sense of Thievishness, the sense of Secretivity, the sense of Circumspection, the sense of Approbation, the sense of Self-love. (What a chaos, and what words!)

† The sense of Benevolence, the sense of Veneration, the sense of Firmness, the sense of Duty, the sense of Hope, the sense of the Marvellous, the sense of Ideality, the sense of Gaiety, the sense of Imitation.

‡ The sense of Individuality, of Extent, of Configuration, of Consistence, of Weight, of Colour.

§ The sense of Localities, of Numeration, of Order, of Phenomena, of Time, of Method, of Artificial Language.

‖ The sense of Comparison, the sense of Causality.

What an apparatus for saying very simple things; for saying that there are *propensities*,* *sentiments*,† and *intellectual faculties!* What singular personification of all these faculties: faculties that know; faculties that reflect!‡ Spurzheim elsewhere speaks of *happy faculties*.§ Indeed, what arbitrariness in the distribution of facts! And Gall, too, is he not half right?

"By what right," says he, "does M. Spurzheim exclude from the intellectual faculties imitation, wit, ideality or poetry, circumspection, secretivity, constructivity? How are perseverance, circumspection, imitation; how are

* "Some of the affective faculties produce only a desire, an inclination. . . . I shall call them propensities."—Observ. sur la Phrénol., &c. p. 124.

† "Other affective faculties are not restricted to a simple inclination, but something beyond; which is what is called sentiment or feeling."—Ibid.

‡ "The intellectual faculties are also double: some of them know; others reflect."—Essai Philosophique, &c. p. 225.

§ "The faculties peculiar to man are happy in themselves, per se."—Ibid. p. 167.

they sentiments? What reason have we for counting among the propensities constructivity rather than melody, benevolence, or imitation?*

Gall, by endowing each faculty with all the attributes of an understanding, makes as many understandings as faculties. Spurzheim makes several kinds of understandings: understandings that know, understandings that reflect, &c. He restores the *sensitive* and *rational souls.*

In fine, Gall and Spurzheim rarely agree as to their faculties. In *hope* Gall sees nothing more than an attribute; Spurzheim beholds it as a primary faculty. In *conscience* Gall sees nothing but an effect of *benevolence;* Spurzheim looks upon it as a peculiar faculty. Gall resolves that there is only one organ of *religion*, and Spurzheim insists upon three—

* Anat. et Phys. du Syst. Nerv. &c. t. iii. p. 27.

the organ of causality, that of supernaturality, and that of veneration, &c. &c.

We should never end, were we to follow them throughout their debates. I have said enough to show the case, and I now pass on to Broussais.

V.

OF BROUSSAIS.

Broussais appears to have been born solely for the purpose of imagining or propagating systems.

Guided by facts which he seized upon with a rare sagacity, Broussais begins by bringing back certain affections to their real seats;* but soon, by an immoderate generalization of this fine result, he perceives all affections in the same affection, all diseases in the same

* See his Histoire des Phlegmas. Chron. 1808.

malady; he imagines one *abstract affection*, by means of which he explains all other affections: *fevers* are nothing but irritations of the digestive apparatus; *insanity* is nothing but an *irritation* of the brain;* and he who is so intolerant of the *personifications* proposed by others, makes one *personification* more; in fine, his exclusive and headstrong genius carries him beyond himself, and, as if merely to amuse him after the fatigue of forming his systems, plunges him into the question of *phrenology*, where he enjoys himself so much the more, because he finds in it his own accustomed method, his own ideas, and his own language: there are plenty of faculties to bring back to their organs, plenty of localizations to establish.

Broussais ought not to be judged of by his "Cours de Phrénologie."† The five or six

* See his work entitled, "De l'Irritation et de la Folie," 1828.

† Cours de Phrénologie, 1 vol. 8vo. 1836.

first *lessons*, or, as he calls them, *generalities*,* are merely a confused mixture of ideas: the notions of Condillac rejected by Cabanis, and the ideas of the phrenologists.

He says that sensibility is the *common origin* of the faculties;† he calls *perception* a *primary faculty*,‡ &c. &c.; and Condillac would not speak differently.

But, on the other hand, he says that there are as many *memories* as there are organs;§ that the instincts and the sentiments possess a memory, as the *external perceptions*‖ have theirs; that the mind is the *sum of the faculties*,¶ &c.; and Gall could not say it more clearly.

* Cours de Phrénologie, p. 82.

† Ibid. p. 140.

‡ Ibid. p. 37.

§ "Memory is not an isolated faculty; and there are as many memories as organs."—p. 131.

‖ "The instincts and the sentiments have a memory as well as the external perceptions."—p. 36.

¶ ". . . . The study of the human mind, not indeed that of a

Broussais is particularly opposed to the *moi* of Descartes. "Seduced," says he, "by the *moi* of Descartes, philosophers have been led to reason according to the testimony of their consciousness. . . ."* And according to what testimony does Broussais think they ought to reason?

He thinks it very funny to call the *moi* an *intra-cranial entity*,† *intra-cranial central being*,‡ *person* par excellence, &c.§

He laughs at the *moi* of Descartes; he forgets that the *moi* of Gall is either nothing else than the sum (*ensemble*) of the intellectual faculties, or nothing else than a word; and he makes for himself a *peculiar*

fictitious one bearing this mysterious appellation, but of the *ensemble* of the mental faculties of man."—p. 82.

* Page 48.

† "The favorers of the intra-cranial entity."—p. 153.

‡ "Their central intra-cranial being, to which they attribute all their faculties."

§ "Suppose they had called this being *person par excellence*. . . ."—p. 75.

moi,* which he locates in the organ of *comparison*. "We owe," says he, "to the organ of general comparison the distinction of one person expressed by the sign *me*."†

Broussais was never designed for compliance with the ideas of others; a yoke oppresses him; he is never truly Broussais, except in the midst of conflict. In 1816 he publishes a volume,‡ and the medical doctrines are shook

* Let us examine, as to this particular (*moi*) ME, all Broussais's *variorums*. In one place the *me* comes from only one organ—the organ of general comparison: "We owe to the organ of general comparison the distinction of our person expressed by the sign *me*."—Cours de Phrén., p. 684. Further on it comes from two—the organ of comparison and the organ of causality: "The organ of causality is as necessary to the distinction of the *me*, and of the *person*, as the organ of general comparison."—Ibid. p. 685. Next there is no organ at all: "To assign to the *me* a special organ appears to me to be out of the question."—Ibid. p. 119. And then it comes from every where: "There is no special and central organ, and our perception of ourselves has for its basis the sensitive perceptions."—Ibid. p. 119.

† Cours de Phrénologie, p. 684.

‡ Examen de la Doctrine Médicale, etc. 1816.

for half a century: we ought to read that volume over again, and forget the "Cours de Phrénologie."

VI.

BROUSSAIS'S PSYCOLOGY.

The fact is, Broussais is busier with his own opinions than with what Gall thought; and here is a specimen of his way of thinking: "The understanding and its different manifestations are," says he, "the phenomena of the nervous actions."* "The faculties," says he further, "are the actions of the material organs,"† &c.

* Cours de Phrénologie, p. 717.

† Cours de Phrénologie, p. 77. He also says, "Their central intra-cranial being, to which they attribute all the faculties of a

Broussais's whole psycology is contained in these words. The organ, and the phenomenon produced by the organ. To speak more clearly, the organ and the action of the organ. To speak like Cabanis, the organ and the *secretion* of the organ, or *thought*.* That's all!

The understanding, therefore, is merely a *phenomenon*, a product, an act. But if this be the case, how can there be a *continuity*

man, is not cognisable by any of our senses,. . . it is therefore a pure hypothesis."—Ibid. p. 153. Thus there is no *mind* (pure hypothesis); no *faculties* but those of the *organs* (the faculties are the acts of *material organs*); no understanding, except as a simple phenomenon of the nervous action (understanding and all its manifestations are *phenomena of nervous action*); consequently, there is no psycology; there is nothing but physiology; and even (for it should be clearly understood) nothing but Broussais's physiology.

* "In order to form for one's self a just notion of the operations which result in the production of thought, it is necessary to conceive of the brain as a peculiar organ, specially designed for the production thereof, just as the stomach is designed to effect digestion, the liver to form the bile, &c."—Cabanis, Rapports du Physique et du moral de l'homme, IIe mémoire, § vii.

of the moi? Now, the consciousness which gives me the *unity* of the *moi*, gives me not less assuredly the *continuity* of the *moi*. Descartes' admirable words are: "I find that there is in us an *intellectual memory*."*

The consciousness tells me that I am *one*, and Gall insists that I am *multiple;* the consciousness tells me I am *free*, and Gall avers that there is no *moral liberty;* the consciousness endows me with the continuity of my

* Whence he concludes still more admirably, to the immortality of the soul. "I cannot," says he, "conceive otherwise of those who die, than that they pass into a more pleasing and tranquil life than ours, even carrying with them the remembrance of the past: for I find there is within us an intellectual memory..... And although religion teaches us many things upon this subject, I must, notwithstanding, confess my infirmity on this point, which it appears to me that I possess in common with most people, which is, that although we might wish to believe, and even might suppose ourselves to be firm believers in the doctrines of religion, we are not so deeply touched with those things that are taught by faith alone, and which our mere reason cannot attain, as by those that are instilled into us by natural and very evident reasons."—T. viii. p. 684.

understanding, but Cabanis and Broussais tell me that my understanding is nothing but an *act*.

Philosophers will talk.

VII.

BROUSSAIS'S PHYSIOLOGY.

The whole of Broussais's physiology is founded upon *irritation*. He says, "Irritation constitutes the basis of the physiological doctrine."* But what is irritation? Broussais replies: "It is the exaggeration of contractility."† But then, what is *contractility?*

In Haller, the term *irritability* (for that is his term for *contractility*) possesses a precise meaning and import. *Irritability* is a pro-

* De l'Imitation et de la Folie, p. 4.

† "The exaggeration of the phenomena of contractility is what constitutes irritation."—Ibid. p. 77.

perty of muscular fibre, by which it shortens or contracts itself when touched.

Haller demonstrated, and it is his glory, that the muscle alone *moves* when it is touched. What is that to Broussais? He goes back again to the vague irritability of Glisson and de Gorter: like those authors, he assigns it to every tissue, and, like them, he explains every thing by means of it.

Broussais's *irritation* is merely Haller's *irritability* exaggerated and deformed.

The genius of Broussais was too impatient to allow him to proceed step by step up to the idea—too impassioned to hinder him from being satisfied with the name—and for that very reason he appears to have been by nature fitted for success in a school where the name is every thing.

But here is the great difference. Gall and Broussais laboured for the School: Descartes toiled for the human mind.

VIII.

I RETURN to Gall.

Those who wish to learn Gall's doctrine, will always go up to Gall himself. Spurzheim already alters the spirit of that doctrine, and Gall complains of it. "M. Spurzheim," says he, "knows my discoveries better than any body else, but he tries to introduce among them a spirit quite foreign to that in which they were begun, continued and perfected."*

* Anat. et Physiol. du Système Nerveux, &c. iii. 15.

Gall, moreover, was a great anatomist. His idea of tracing the fibres of the brain is, as to the anatomy of that organ, the fundamental idea. The idea is not his own: two French anatomists, Vieussens and Pourfour du Petit, had admirably understood it long before his time; but at the period of his appearance it had been long forgotten. The brain was not then dissected by any one: it was cut in slices.

It was a great merit in Gall to have recalled the true method of dissecting the brain; and there was still greater address on his part, in connecting with his labours in positive anatomy, his doctrine of independent faculties and multiple brain.

This strange doctrine has had a fortune still more strange. Gall and Spurzheim forgot to place *curiosity* among their primary faculties. They were wrong. But for the credulous curiosity of mankind, how could they have explained the success of their doctrine?

Fortunately, a system never lives otherwise than as a system lives. That of the moment is abandoned for the sake of another: and almost always for a perfectly opposite one. Systems multiply and pass away; and we are indebted to the systems themselves for an escape from the mischiefs of systems.

NOTES.

NOTE I.

ANATOMICAL RELATIONS SUPPOSED BY GALL TO EXIST BETWEEN THE ORGANS OF THE EXTERNAL SENSES, AND THE ORGANS OF THE INTELLECTUAL FACULTIES.

Page 82. *According to Gall, the origin, the development, the structure and mode of termination, as to the organs of the faculties of the soul and the organs of the external senses, every thing is similar, every thing is in common.*

It is known that two substances compose the nervous system—the gray matter, and the white or fibrous matter. Well, according to Gall, one of these substances produces the other. The *gray matter* produces the *white matter.*

Wherever, therefore, there happens to be any *gray matter*, white matter must appear; that is to say, *nervous fibres*,* *nervous filaments*, nerves. All the

* The white matter is every where fibrous. No person has contributed more than Gall to the demonstration of this great fact. He justly remarks: "Those authors who, with Sœmmering and Cuvier, &c., recognise the fibrous structure of the brain, in many of its parts, have nevertheless, not yet ventured to say that it is so in all its parts."—T. i. 235.

nerves in the body must arise in this way. The spinal nerves arise from the gray matter which is in the interior of the spinal marrow; the cerebral nerves from the gray matter that is in the interior of the medulla oblongata.

Hence, the nerves of the body are *organs of the senses.*

On the other hand, the brain and the cerebellum,* which are *the organs of the faculties of the soul*, must arise like the nerves: the brain from the gray matter of the *pyramidal eminences;* the cerebellum from the gray matter that surrounds the *restiform bodies.*

In the second place, whenever a nerve traverses a mass of gray matter, it receives from it, according to Gall, certain new nervous filaments; and in this way it grows and developes itself. The cerebrum and cerebellum will not fail therefore to grow and be developed likewise. The primitive bundles of the cerebellum, (*the restiform bodies,*) will grow by means of the filaments which will be imparted to them by the gray matter of the *ciliary body:* the primitive bundles of the cerebrum, (the *pyramidal eminences,*) by the filaments imparted to them by, first, the gray matter of the *pons varolii;* secondly, by that of the *optic strata;* and then by that of the olivary bodies, *corpora striata*, &c. &c.

Finally, in the same manner as a nerve of sense expands at its termination, and by means of such ex-

* The cerebellum serves only for the motions of locomotion. (See the first article of this work.) But, I am here setting forth Gall's opinions.

pansion forms the organ of the sense, so the primitive bundles of fibres of the brain and of the cerebellum terminate in expansions, and constitute the *organs of the internal senses;* that is to say, the lobes of the cerebellum and the hemispheres of the brain.*

NOTE II.

Difference between Instinct and Understanding.

Page 64 (Note). *And he does not see that as to the instincts and the understanding all is contrast.*

Here is what I have elsewhere said upon this ques-

* "The particular systems of the brain terminate in fibrous expansions arranged in layers, just as the other nervous systems expand in fibres at their peripheral extremity."—T. i. 318. "All the diverging bundles of the brain, after they come out from the last apparatus of reinforcement, expand in layers and form convolutions."—T. i. 283. "The nerves of sensation and motion expand in the skin and the muscles; the nerves of the senses, each in the external instrument to which they belong: for example, the pituitary membrane upon the bones of the nose: the nerve of taste in the tongue, and the expansion of the optic nerve in the retina. . . . . Nature obeys precisely the same law in the brain. The different parts of the brain originate and are reinforced at different points; they form fibrous bundles of various sizes, which terminate in expansions. All these expansions of the various bundles constitute, when reunited, the hemispheres of the brain."—T. iii. p. 3.

I here speak only of the *diverging fibres.* Coming from the interior, they proceed towards the exterior: the *converging fibres* coming from the exterior, that is, according to Gall, from the gray matter that envelopes the brain and the cerebellum, are directed inwards. The former constitute the *convolutions,* while the latter compose the *commissures.* But I shall, further on, return to this subject.

tion, so long debated, of the *instinct and understanding of animals.*

"There is a most complete difference between *instinct* and *understanding.*

"In *instinct* all is blind, necessary, and invariable. In *understanding* every thing is elective, conditional, and modifiable.

"The beaver which builds its house, and the bird that constructs its nest, act only by instinct.

"The dog and the horse, that learn even the meaning of several of our words, and who pay obedience to us, do so by understanding.

"In *instinct* all is innate. The beaver builds without having learned to build: all that he does is from fatality. The beaver builds under the impulsion of a constant and irresistible force.

"In *understanding*, every thing results from experience and *instruction.* The dog obeys only because he has learned to obey: he is perfectly free in this respect; for he obeys only because he will obey.

"Finally, in regard to *instinct* every thing is particular. That admirable industry that the beaver exhibits in the construction of his hut, can be employed in no other occupation than the building of his hut. Now, in *understanding* every thing is general; for the dog could apply the same flexibility of attention, and of conception, which he uses in obeying, to do any other thing.

"In animals there are, therefore, two distinct and primary forces—*instinct* and *understanding.* As long as our conceptions of these forces were confused, all

our views and opinions in regard to the actions of animals remained obscure and contradictory. Among these actions, some exhibited man every where superior to the brute; while others appeared to accord to the brute creation the superiority over man—a contradiction almost as deplorable as absurd! By the distinction that separates blind and necessary actions from elective and conditional ones—or, in a word, instinct from intelligence—all contradiction disappears, and order succeeds to confusion. Whatever in animals is *understanding*, does not in any degree approach the excellence of the human understanding; and whatsoever, under the appearance of *understanding*, seemed superior to the human understanding, is in fact a mere result of a mechanical and blind force."*

Here is what I say as to the boundaries between the intelligence of man and of animals.

"Animals receive, through their senses, impressions similar to those that we receive through the medium of our senses; like ourselves, they retain the traces of these impressions: these impressions, when preserved, form for them, as well as for us, numerous and various associations: they combine them, they draw from them inferences, and deduce judgments from them: therefore they possess understanding.

"But the whole of their understanding stops at that point. The understanding they possess is not one that can consider itself: it cannot see itself, does not know

*See my work, De l'instinct et de l'intelligence des animaux, &c. p. 46, 2d edit.

itself. They do not possess *reflection*, that supreme faculty with which the mind of man is endowed, and which enables him to turn his intellectual power inwards, so as to study and know the nature of his own understanding.

"Reflection, thus defined, is then the boundary that separates human intelligence from that of the brute creation: and in fact it cannot be denied that this furnishes a strong line of demarcation between them. Thought, which contemplates itself; understanding, which sees itself and studies itself; knowledge, which knows itself; these evidently constitute an order of determinate phenomena of a decided character, and to which no brute animal can ever attain. This is, if one might so speak, a purely intellectual domain; and it appertains to man alone. In one word, animals feel, know, think; but man is the only one of all created beings to whom has been given the power of feeling that he feels, of knowing that he knows, and of thinking that he thinks."*

I will quote, also, the following passage from my work sur *l'instinct et l'intelligence des animaux*, p. 178, et seq.

". . . . . There are three facts: *instinct*, *understanding of brutes*, and *human understanding;* and each of these facts has its definite limits.

"Instinct acts without knowing; understanding knows in order to act; the human understanding alone knows, and knows itself.

* Opus citat. p. 49.

"Reflection, closely defined, is the *knowledge of thought by thought*. And this power of thought over thought gives us a whole order of new relations. As soon as the mind perceives itself it judges itself; as soon as it can act upon itself it is free; as soon as it becomes free it becomes moral.

"Man is only moral because he is free.

"The brute animal follows its body; in the midst of this body, which shrouds it completely in matter, the human mind is free, and so free that it can, whenever it prefers to do so, immolate its very body.

"'The great power of the will over the body,' says Bossuet, 'consists in this prodigious effect, that man is so completely master of his frame, that he can even sacrifice it for the sake of some greater good in view. To rush into the midst of blows, and plunge into a flight of arrows from a blind impetuosity, as happens among brute creatures, shows nothing superior to the body itself; but to resolve to die with understanding, and for reasons, notwithstanding the whole disposition of the body to the contrary, evinces a principle superior to the body; and among all the tribes of animals, man is the only one in whom this principle exists.'"

NOTE III.

Gall, as an Observer.

Page 93. *He studied them (mankind) in his own way, but he studied them very closely.*

Gall was a practical observer. He observed and studied always, and with so much the greater success

because "people never suspected that they had to do (these are his own words) with a man who knew perfectly well that the basis of human character continues to be always the same, and that merely the objects that interest us change with the progress of years."*

He examined "families, schools, hospitals, &c."† And he never was satisfied with appearances only. "The occupations that we pursue as our business, generally prove nothing either as to our faculties or our propensities: but those which we engage in as recreation are almost always in conformity with our tastes and our talents."‡

His observations on men were more serviceable to him in judging of and describing their characters, than the *bumps on the skull.*

"I often said to my friends, show me the fundamental forces of the soul, and I will find the organ and the seat for each one of them.§ . . . . When I had become convinced that a distinguished talent, and one fully so recognised, was especially the work of nature, I examined the head of the individual, ... &c."‖

Gall's progression, then, was from *observation* to the *cranium;* he first proceeded from *observation* to the *cranium*, and next from the *cranium* to the *brain.*

Furthermore, Gall began by studying the *physiognomy*—the *features* of the *countenance*—like Lavater.

He at first thought that a good memory was connected with a certain *conformation of the eyes:* "I remarked," says he, "that they all had large projecting

* T. iii. p. 64. † T. iii. p. 64. ‡ T. iii. p. 64.
§ T. iii. p. 58. ‖ T. iii. p. 59.

eyes. . . . . I suspected, therefore, that there ought to exist some connexion between memory and this conformation of the eyes."* Again he says, "It may be perceived, from the progress of these researches, that the first step consisted in the discovery of certain organs; that it was by degrees only that we allowed facts to speak in order to deduce from them general principles; and that it was subsequently, and towards the close, that we had learned to know the brain."†

Thus it appears that the study of the brain came later than the doctrine; and that is the reason why the anatomy of the brain is a mere series of mistakes and conjectures—I mean here the *special anatomy*, the *secret anatomy*, the *phrenological anatomy;* I mean the anatomy made out to suit the doctrine. I have already sufficiently discriminated between it and the *real anatomy*.‡

NOTE IV.

Of the Animal Spirits.

Page 116. *He who is so intolerant of the personifications proposed by others makes one personification more.*

Broussais explains every thing by the word *irritation*, just as Gall explains every thing by the word *faculties*, and as Malebranche explained them by *animal spirits*.

After serving Descartes, the *animal spirits* were in

* T. i. p. 3. † T. i. p. 18. ‡ T. i. p. 64 & 67.

the service of Malebranche; they served all the authors of the seventeenth century.

Malebranche commences one of his chapters with these words: "Every body agrees that the *animal spirits* . . . ."* He had no idea that every body would agree some day, that the *animal spirits* is mere nonsense.

There were animal spirits of all sorts; as Gall had *faculties* of all sorts: there were *agitated*† animal spirits, *languid* animal spirits.‡ There were even *libertine* animal spirits.

"Wine is so spirituous," says Malebranche, "that it is *animal spirits* almost completely formed, but libertine spirits." §

The animal spirits seemed to have become the *ultima ratio* of the philosophers.

The author of a book, in other respects to be esteemed, thus defined *imagination:* "Imagination is a perception of the soul's caused by the internal motion of the animal spirits."‖

That author had no doubt that he was saying something.

NOTE V.

Exaggeration of Broussais, even in Phrenology.

Page 120. *We ought to read that volume over again, and forget the Cours de Phrénologie.*

Broussais does not adopt merely the general ideas of the phrenologists—he adopts even the smallest of them.

* De la Rech. de la Verité. liv. ii. chap. ii. † Ibid. ‡ Ibid.
§ Du bel esprit, p. 80. ‖ Ibid.

Gall had located the *instinct* of *murder* in a given part of the brain; and he supposed, be it understood, that this part existed only in the brain of the carnivorous animals. But see, it is found in the brain of the herbivora; and one would suppose that the phrenologists would be in trouble about it. Don't deceive yourself, the *instinct of murder* is the *instinct of destruction*. Spurzheim denominates it *destructivity;* and the herbivorous animals must possess it, for they eat plants and consequently *destroy* them.

"The herbivora" says Broussais, "effect a real destruction among plants.* An attempt has been made to turn these ideas into ridicule, even in an Academy. . . . It was in a learned society of this kind considered ridiculous in the phrenologists to compare the destruction of vegetables to that of animals. For my own part I do not see why the idea should be rejected, if the fundamental object of the organ be to procure the means of alimentation, which seems to be quite certain."†

Gall imagines an organ for religion; he thinks it peculiar to man, and denominates it the *Organ of Theosophy*. The same organ is found quite down in the scale as low as the sheep;‡ and do not suppose that Broussais is at all shocked by the discovery. If necessary he will go further than all the phrenologists taken together.

"The phrenologists" says he, "have denied that this sentiment (the sentiment of veneration) belongs to the

* Cours de Phrén. 218. † P. 221.

‡ See M. Leuret: Anat. Comp. du Syst. Nerv. &c. 1839.

animals. I am not of that opinion. A certain shade of *veneration* exists in many species, among the vertebrata, that choose their leaders, and march according to a signal given by their chiefs and obey them. Thus even among the sheep you may see a chief."*

Who would have believed it? Broussais finds Gall too timorous.

"There is," says he, "no central organ. This is considered as one of the most powerful objections to Gall. As far as I know he never answered it. As for me, I shall be more frank, perhaps more bold: I shall say it is impossible that there should be one, &c."†

NOTE VI.

Contractility of Broussais.

Page 126. *He assigns it to every tissue, and, like them, he explains every thing by means of it.*

He assigns it to every tissue. Haller attributed this property to the muscles alone, "but it is a common property of the tissues."‡

He explains every thing by means of it: every thing, even *innervation* itself. But he is constrained to add: "Doubtless *something more occurs* in the interior of the nervous tissue; doubtless we are unacquainted and ignorant as to how *that other thing* is connected with the motions in question, and how it may employ them in the act of innervation," &c.§

* Cours de Phrén. p. 350.

† Ibid. p. 117.

‡ De l'Irritation et de la Folie, p. 2.

§ Ibid p. 76.

So we perceive, in the first place, *contractility* explains *innervation ;* and then, that *something more* is wanting. And as nervous contractility is nothing but a mental fiction (a nerve never moves, never *contracts*, when it is touched) the whole matter tapers down to this *something more*, or to *that other thing*.

See how very far from being rigorous are those who construct systems.

NOTE VII.

Real Labours of Gall as to the Brain.

Page 128. *Gall, moreover, was a great anatomist.*

He found that the medullary substance of the brain was fibrous throughout;* he saw the fibres of the medulla oblongata decussate before they form the pyramidal eminences,† those of the corpora olivaria, &c.;

* Steno had already said, "If the medullary substance be every where fibrous, as in fact, in most parts it appears to be, you must confess that the disposal of these fibres must be arranged with great skill, since the whole diversity of our feelings and motions depend upon them. We wonder at the artifice of the fibres in each muscle, but how much more are they worthy of admiration in the brain, where these fibres, enclosed within so small a space, perform each its own function without confusion and without disorder."—*Discours sur l'anat. du cerveau*, 1668.

† Long before his time the same had been seen by Mistichelli, Pourfour du Petit, Winslow, and several others, but it had been forgotten. "Each pyramidal body," says Pourfour du Petit, "is divided at its inferior part into two large bundles of fibres, most frequently into three, and in some instances into four. Those of the right pass to the left side, and those of the left pass to the right side, mingling with each other."—*Lettre d'un médecin des hôpitaux du Roi.* Namur 1710.

that is to say, all the ascending fibres of the medulla oblongata across the pons varolii, thalami nervor opticorum, and the corpora striata, as far as the vault of the hemispheres; he saw the bundles formed by these fibres increased in magnitude at each of these passages; he distinguished the fibres which go out in order to expand in the hemispheres, from those that go in in order to give birth to the commissures: many nerves that were regarded as coming out immediately from the brain, were by him traced even into the medulla oblongata, &c.

And I repeat that all these facts, with the discovery of which he has enriched the science of anatomy, all of them are the results of a happy thought of his—the idea of *tracing* the fibres of the brain, or to use a common expression, of substituting in the dissection of the brain the method of *developments* for that of *sections*.

Those of Gall's opinions which it seems ought not to be adopted, are: that in which he supposes the nerve fibres to be born (he understands the word to the letter) of the gray matter; that in which he contends that the convolutions of the brain are merely foldings of the medullary fibres, and can therefore be *unfolded;* that in which he compares the rete mucosum of the skin to the gray matter of the encephalon, &c., &c.

Gall had a mind which impelled him to the formation of hypotheses; and even in his real anatomy there is a decided smack of a system-author.

THE END.